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ERRATUM.

Page 448. line 10. from bottom, for "1742" read "1780."

PRACTICE OF PHYSIC.

ORDER IV.

VESANIÆ.

IMPAIRED judgment, producing disproportionate emotions, without pyrexia or coma, is the character assigned by Dr. Cullen to these disorders.

INSANIA, OR MADNESS.

IN this article, the term mania as a generic expression has been rejected, because, as employed by the ancients, it admits of great latitude of meaning, while by the moderns its signification has been limited to one particular species of mental disturbance. Even according to its earliest and original use the signification of the word mania was somewhat vague; it was sometimes employed to denote raving madness, sometimes madness in general, and sometimes merely melancholy. The words madness and insanity, therefore, have been chosen in preference to the term mania, which will, in these pages, be employed only in its modern and more restricted sense.

The definition of madness, which was generally given while mania was looked upon as its sole form, is, delirium unaccompanied by fever; this definition, however, is now universally acknowledged to be not quite correct. At the present time, it is thought that this disease should, in a nosological arrangement, be placed between phrenitis and delirium tremens, inasmuch as in some cases it is strongly allied to the former in being accompanied by fever, delirium, and cerebral congestion, while it bears a still greater analogy to the latter by reason of the delusions and nervous irritation with which it is always associated. Moreover, the preceding definition of madness appears to have been given in a far too limited sense, inasmuch as, for the most part, it is only applicable to one particular class of cases. The best modern authorities on the subject having taken a much more extended view of the nature of madness,

have accordingly greatly enlarged the meaning of the term. By most authors the terms *insania* and *madness* are now indifferently employed to denote all morbid manifestations of mind whatsoever.

Thus "insanity," writes Dr. Copland, "may be viewed as a generic term, comprehending every grade of perversion of the moral, or of the intellectual, or of the instinctive manifestations of mind, or of any two, or of all these classes of manifestations from the healthy states—to such perversion, a more or less manifest but variable alteration of the sensations, perceptions, judgment, and voluntary movements, being usually added; or, in other terms, the essential phenomena of insanity are—a more or less manifest or extensive change of the functions of the brain from their accustomed healthy condition—of the sensibility, the perceptions, the intellectual and moral powers, the judgment and the movements, without any profound, obvious, or durable affection of the organic functions. Yet these latter functions are not always or generally devoid of disorder." (Dictionary of Medicine, art. *Insanity*, p. 434.)

Now, admitting an insane person to be he who says and does insane things, and that insanity is invariably *manifested* by disorder of thought or understanding, or of the emotions and conduct, there is still great difficulty in framing a definition which shall include all forms of the disease, and exclude other morbid states.

"It is extremely difficult, if not impossible," writes Dr. Copland again, "accurately to *define* insanity, or to draw a line of demarcation between it and, what has usually been denominated, singularity of opinion, or eccentricity of conduct." "I shall equally avoid," says Dr. Conolly (Lancet, vol. ii. 1848, p. 359.), "any long discussion of the nature of insanity, or any affected definition of a disease which is best expressed by negatives. Whatever form it presents, there is an evident privation, to a greater or less extent, of the proper use and application of the intellect. In all cases there is some want of that power which controls the affections and propensities, and all the actions suggested by them." "We may," says Dr. Prichard, "describe insanity as a chronic disease, manifested by deviations from the healthy and natural state of the mind; such deviations consisting either in a *moral perversion*, or a disorder of the feelings, affections, and habits of the individual, or in intellectual derangement." (Treatise on Insanity, p. 7.) "Sir A. Morrison" (Outlines of Lectures on Insanity, p. 123.) "conceives that the general idea of the insane state may be comprehended in the three phenomena of delusion, incoherence, and irrational conduct." Such are the descriptions given of this malady by four recent and high authorities, and it may be worth while to dwell upon them for a time, with a view of pointing out some of the particular propositions which they involve.

And first we remark, that the absence of fever in insanity is not so strongly insisted upon by these authors, as by some it is wont

to be; nay, we shall find that, in some recent cases, this guide will fail us, however available it may be in general. Thus, Sir A. Morrison writes (pp. 337, 338.), that "an important deviation from the ordinary progress of an attack of insanity is produced by a sub-inflammatory condition of the brain, in which the pulse, both at the wrist and at the carotid arteries, is firm and hard, the thirst considerable, the skin hot and dry." Dr. Conolly observes (*Lancet*, vol. ii. 1845, p. 416.), that "the commencement of mania is said by M. Esquirol sometimes to be marked by all the symptoms of a severe attack of fever; and adds, that such cases certainly do occur, and are usually fatal. They are distinguished from ordinary cases of fever, chiefly by the locomotive activity of the patient, who continues restless, and often walking about, and frantic in all his attempts, until rapid sinking takes place." "Attacks of madness," says Dr. Prichard, another high authority (*Forms of Insanity in Relation to Jurisprudence*, p. 23.), "frequently come on attended with symptoms of fever." It is manifest, then, that fever may co-exist with insanity, although this combination is to be regarded as accidental, and an exception to the general rule. The previous history of the patient, and the subsequent course of the disorder, must be studied, in order to determine the class to which the cerebral disturbance is to be referred. If, while the mental aberration and the pyrexia undergo variations of intensity, they do not increase or decrease simultaneously, or do so to a very disproportionate extent, their mutual independence will be apparent, and the presence of insanity may be inferred. We do not recognise the pyrexia as the source of the insanity when they coexist, but we find them too frequently associated to admit the presence of the former in disproof of that of the latter. It results, in the second place, from the descriptions given above, that insanity is not to be solely regarded as a direct manifestation of defect or perversion of the intellectual faculties. Want of power to control the affections and propensities, perversion of the moral or of the instinctive manifestations of mind, and irrational conduct, — the terms used as descriptive of the conditions which may constitute insanity, all recognise a form of moral insanity of which we shall have presently to speak, and which it is often no easy matter to discriminate from depravity.

Neither is it asserted or implied that delusion constitutes the sole essence or evidence of insanity. "Delusions," says Dr. Conolly (*Lancet*, 10th Nov. 1849, p. 495.), "are among the most common phenomena of insanity, but their absence is not a proof of the absence of insanity." "This state" (acute mania), according to Dr. Copland, "may exist without any false perception or delusion. Very frequently, however, as soon as violence is manifested, some illusion, or hallucination, or absurd impression, as to the patient's own person or powers, or his relation to others, appears; but it is seldom permanent; it is soon forgotten, or gives way to some other phantom." (*Diet. II.* p. 147. § 132.)

From the preceding remarks we may gather, then, that the term insanity or madness is at present used, by those most conversant with the subject, to denote the opposite of that state of mind which we call sane, and that it is applied equally to those morbid conditions which consist in undue activity of one, or more, or of all the mental faculties, and to those which are marked by defective activity, whether congenital or acquired. When employed in this extensive sense, it must be evident that all the species of alienation of mind are included under the common genus, insanity; that the term is not synonymous with erring reason and imagination; and that every insane person is not a maniac, though every maniac be insane. It is now, indeed, admitted as a well established fact, that the mind, as manifested, is an aggregate of several distinct faculties, which are so many distinct modes of activity, or so many diverse operations, of one and the same mental essence, and that thus the reasoning powers, the emotions or sentiments, and the passions, may each or all become the subject of disorder. For the emotions and passions, which, with the reason and imagination, are equally sources of action, may equally, with the reason and imagination, give rise to insane conduct: moreover, in madness, imagination does not always mislead the judgment, and consequently delusion is not invariably a correct test of insanity.

Although insanity usually breaks out suddenly,—the manners of the patient becoming preternaturally impetuous, his conversation hurried, his mind full of projects, which he pursues with restless activity, there are instances where insanity makes its approach gradually: a certain whimsicality of disposition, and waywardness or singularity of character, are observed for some time, perhaps for years, before the individual is set down by his friends as a madman; and this is particularly the case in hereditary derangement.

“Persons who are constitutionally disposed to insanity,” remarks Dr. Arnold (vol. i. p. 246.), “are usually conspicuous for the want of that sober investigation in matters of reasoning, and of that prudent moderation in the conduct of life, which characterise men of cool heads and sound understanding: with regard to *religion*, they are apt to run into superstition or enthusiasm on the one hand, or into infidelity on the other, overleaping that temperate mean within which a better judgment would have restrained them:—with regard to *morals*, to deviate either into austerity, or licentiousness;—and with regard to their *health*, are either incautious and intemperate free-livers, or anxious and scrupulous valetudinarians.”

In no two patients is the disease ushered in, or continued, with precisely the same appearances; for the different propensities and habits of different patients lead of necessity to a difference of idea and of expression in each. The precursory symptoms of a paroxysm are, however, very frequently as follows:—The patient is strongly affected by every emotion or passion of the mind, he

becomes distrustful of his friends and relatives, is very fretful and irascible on slight occasions; he is subject to a kind of uneasiness, which he cannot describe or account for; experiences a degree of fear that sometimes amounts to terror, and feels either little disposition or absolute incapacity to sleep."

"In many instances," says Dr. Haslam, "pain of the head and throbbing of its arterics precede an attack of insanity; sometimes giddiness is complained of; some complain of a sense of working in the head, and most of a want of sleep. They have all the appearance of persons inebriated."

They become uneasy, are incapable of confining their attention, neglect their employment, say that they do not seem to possess their natural feelings, and that they feel confused from the sudden and rapid intrusion of unconnected thoughts. They are loquacious and disposed to harangue, and decide promptly and positively on every subject. Soon after, they are divested of all restraint in the declaration of their opinions to those with whom they are acquainted. Their friendships are expressed with fervency and extravagance; their enmities with intolerance and disgust. They become impatient of contradiction, and scorn reproof. For supposed injuries they are inclined to quarrel and fight with those about them. At length, suspicion creeps in upon the mind, they are aware of plots which had never been contrived, and detect motives that were never entertained. At last, the succession of ideas is too rapid to be examined; the mind becomes crowded with thoughts, and confusion ensues.

After a time, incoherence and incongruity of idea are betrayed in the outward conduct, by unusual gestures, and by extraordinary changes in the expression and movements of the countenance.

Some madmen are remarkable for good humour and mirth, which they express by fits of loud and immoderate laughter. There are others, again, whose taciturnity is perpetual; who express their afflictions by tears, or who sink, without a tear, under the distressing influence of solitary anxiety. This happens in melancholia, to which there are usually added, fondness for solitude, timidity, fickleness of temper, great watchfulness, flatulence in the stomach and bowels, costiveness, and a small weak pulse.

The countenance, too, in melancholia wears an anxious and gloomy aspect, and frequently melancholics will keep their eyes fixed on some object for hours together, or continue them an equal time "bent on vacuity." If they read a book they are frequently unable to give any account of its contents, and will sometimes gaze at the same page for an hour, at others turn over a number of pages in a minute. They become negligent in dress and inattentive to personal cleanliness; they often seclude themselves in obscure places, or lie in bed, the greatest part of their time. Their feelings and emotions are transitory. They next become fearful, and conceive a thousand fancies; often recur to some immoral act which they have committed, or imagine themselves

guilty of crimes which they never perpetrated; believe that God has abandoned them, and with trembling await his punishment. Frequently they become desperate, and endeavour by their own hands to terminate an existence, which appears to be an afflicting and hateful enshrouement.

Madmen usually appear to be older than they really are; they age prematurely. This is in part the result of that rapid decay of constitution which ensues upon long continued insanity, and in part due to the material lesions with which the disease is commonly associated. The complications of madness, as these lesions are usually termed, should not be viewed as separate and independent affections which are merely contemporaneous with insanity, since, in many cases, they in reality constitute its exciting cause, or form one of a series of morbid conditions of which madness is another. Mental alienation, indeed, it may be confidently stated, rarely occurs in a healthy frame. We find it engrafted upon paralysis, epilepsy, phthisis, and scrofula, as well as upon gastro-intestinal, or cardiac disease, or upon disorders of the renal or uterine functions; and although the subjective symptoms which usually denote these diseases may, in the insane, be frequently wanting, they not the less induce the same wreck in the organic frame, and are attended ultimately by the same exhaustion. This will partly account for the infirm and decrepid appearance presented by many among the insane, for the fixed, careworn expression of the melancholic, the mobile but emaciated aspect of the maniac, and the relaxed, vacant, and exhausted look of the imbecile and idiotic. Considerable influence must, on the other hand, be also conceded to the state of mind in inducing these alterations of the bodily frame.

In the insane, the tongue is sometimes normal, but more frequently white and coated; occasionally it is red and glazed, and not rarely large and œdematous, bearing on it impressions of the teeth, which are often carious. The breath is frequently foetid, and the flow of saliva much augmented; the latter, especially, occurs at the time of the paroxysm, at which period, too, the secretion is often unusually viscid. The appetite is in some unchanged, in others diminished; in others, again, inordinate; while occasionally, particularly in melancholia, it is wholly lost, and food is altogether refused. The abstinence from food, however, does not always spring from want of appetite; some who are suicidal have recourse to starvation, because it holds out the hope of a slow and painless death; some, again, as a preferable alternative to the death by poison, of which they live in constant dread; and others, whose existence is embittered by continual fear of death, because it offers a ready means of terminating their anxiety and suspense. Cases likewise occur of perversion of appetite, in which a preference is shown for the most disgusting substances over the most palatable food.

"I have seen," says Van Swieten, "a maniac tear all his clothing from his body; lie naked upon straw, on a cold pavement, for

many weeks during the severity of a cold winter; sometimes abstain from food for eight days together, then greedily swallow whatever was placed before him, and, what was shocking to behold, devour his own excrement, even when he had the best of food at hand. I have known him to have no sleep for many weeks together, to fill the whole neighbourhood with his dreadful cries." (Van Swieten, *Comment. Aph.* 1120. t. 3. p. 521.)

Thirst is rarely great: many suffer from functional dyspepsia; and organic disease of the stomach is occasionally met with, chiefly in those who fancy they are poisoned. The stools are mostly fetid, rarely regularly excreted; constipation is common, and severe diarrhoea of frequent occurrence.

Disordered functions of the sexual system are among the most common of the derangements of the insane: in women the menstrual secretion is often scanty or suppressed, and a cure of the psychical disease speedily follows upon its re-establishment: in some rarer cases it is profuse, when the recurrence of the period is not unfrequently contemporaneous with an exacerbation of the mental malady. Sexual desire is, in both sexes, occasionally lost; but often, on the contrary, increased; indeed, this latter constitutes the distinguishing feature of the disorder of satyriasis and nymphomania; the same also obtains in puerperal mania. In melancholia and dementia onanism is not rarely practised.

Muscular system.—This is much and variously disordered in the insane: violent gustulations and muscular efforts, saltations, gyrations, contortions, and convulsions, either partial or general, and with or without consciousness, agitations, spasmodic twittings, or general tremor, grinding of the teeth, cataleptic and ecstatic conditions, permanent flexion, or tetanic rigidity of limbs, or paralysis, or immobility, affecting either a single muscle, or limb, or the whole body, are each and all among the disorders which are frequently encountered in the insane.

In many of the insane, especially in epileptics, during paroxysms, the muscular force is said to be enormous; and this is believed even to be sometimes the case when they have abstained from food, and been deprived of sleep for many days and nights.

Circulation.—This is generally languid and feeble; the pulse being usually frequent, but small and compressible. Venous congestion is common in parts remote from the centre of circulation. Heart-disease is not an unusual complication, and distension of the vessels of the neck not seldom met with.

Nervous system.—The general sensibility is now augmented, now wholly lost; many of the insane complaining of excruciating pain in parts free from disease, others enjoying complete immunity from pain, even when labouring under the most severe organic lesions, and, according to general opinion, being equally indifferent to heat and cold. But we are assured by Mr. Haslam, that the insane possess no such exemption. He tells us, that those under strict confinement in the asylum under his care are particularly

subject to mortifications of the feet ; and that those who are permitted to go about in the hospital are always to be found as near to the fire as they can get during the winter season.

Mr. Haslam's observation is confirmed by Professor Pinel ; and we are cautioned by him against the belief, that the power of resisting cold is universally great. He affirms, that seldom a year has passed during which no fatal accident has taken place, from the action of cold upon the extremities, at the asylum of Bicêtre, in Paris, to which he is physician.

The pupil may be natural, or contracted, or dilated or alternately contracted and dilated ; when contracted, that of both eyes may be equally affected, or one may be smaller than the other, or the diminution may be only in the pupil of one eye ; when dilated, both may be so equally or unequally or one alone may be enlarged, or, while one is dilated, the other may be contracted. In some cases the sensibility of the eye is augmented, and there is photophobia ; in others it is diminished, the iris acting but slowly ; in others, again, it is lost, the pupil remaining unaffected in the strongest light ; whilst in a fourth class of cases, the sensibility of the optic nerve seems to be perverted ; such perversions will be referred to under the head of delusions.

There is occasionally drooping of the upper eyelid (ptosis), or otherwise, an unnatural separation of the eyelids and prominence of the globe.

Maniacs commonly sleep but little ; yet a tranquil night, or even a prolonged sleep, does not invariably calm their excitement. When possible, however, sleep should always be procured ; but narcotics, when employed in even large doses, are often known to fail. In chronic dementia and imbecility there is usually a tendency to excessive somnolency. In the case of melancholics, when sleep is brought about, this is often broken by frightful dreams.

Hallucinations and illusions of the senses are rarely wanting in madness. The two are usually associated, and they are almost always followed by delusions.

The author of the "Autobiography of a Madman," gives the following graphic sketch of his state :— "My senses were all mocked at and deceived. In reading, my eyes saw words on the paper which, when I looked again, were not. The forms of those around me, and their features, changed even as I looked on them. I heard the voices of invisible agents, and notes so divine, so pure, so holy, that they alone, perhaps, might recompense me for many sufferings. My sense of feeling was not the same ; my smell, my taste, gone or confounded."

Such hallucinations and illusions, although not universally present, are among the most constant accompaniments and trustworthy evidences of the insane state.

Excluding illusions which are dependent upon physical causes, such as optical and acoustic illusions and such as result from

pathological changes in the external apparatus of the senses, we here purpose to treat of those cases alone in which the sensation is caused by an external object, but ceases to call up the perception which, under ordinary circumstances, it is wont to do. "In the insane," says Esquirol, "the sensations are disordered; many do not read because the letters appear to them to be heaped one on another, and they cannot arrange them to words and sentences. They often mistake their relations and friends for strangers or enemies. They believe themselves to be in their own houses when they are in an asylum." The testimony of Arnold (*On Insanity*, p. 100.) is to the same effect. "I have known," says he, "a patient in this state, in the clearest daylight, so grossly to mistake certain objects, as to imagine bricks, stones, logs of wood, sticks, or straws, to be kings, princes, generals, instruments of war, horses, and other things; to describe their dress and appearance, and to be quite angry at the blindness or perverseness of those who could not, or, as he rather imagined, pretended they could not, see the same objects."

Those who are of sound mind likewise sometimes become the subjects of illusions. Baron Larrey had a patient to whom all objects appeared of unnatural magnitude; men became giants, and a cup of ptisan seemed as large as a cask. A patient of Dr. Conolly's told him that for a time, after an attack of paralysis, everything appeared to him to be green. It is related of Sir Joshua Reynolds, that upon walking out into the street after having been occupied for a long time in painting, the lamp-posts seemed to him to be trees, and the men and women moving shrubs.

At all times, when the sensory organs are somewhat impaired in acuteness, or when objects are looked at in an obscure light, the impressions made on the senses give rise to indistinct and undefined sensory images. Of such indistinct sensations we can only have indefinite perceptions; yet we believe that we see a distinct and definite object, whereas in reality we do no such thing. On inquiry into the reason why in such cases we often obtain a false perception, it seems to be explicable by the fact of the peripheral impression upon the nerves being feebly perceived by the brain, and giving rise to such a cerebral condition as suffices to call up some idea, and usually that particular one by which at the moment the mind is engrossed or preoccupied.

We shall hereafter state more clearly the distinction between illusions and hallucinations.

In hallucinations, the person affected fancies that he sees, hears, tastes, smells, or touches, and has actual sensation and perception of something not at that time present to the organs of sense; he has subjective sensory impressions, strong, vivid, and apparently truthful, to which nothing objective, nothing external, corresponds. In hallucinations, the nerves are in a condition of increased excitability — hyperæsthesia; they consequently respond to the

application of ordinary internal stimuli by the manifestation of undue excitement, — of functional activity. This state is shown somewhat differently according to the class of nerves which are implicated. Affecting nerves of common sensibility, it is evinced by unduly drawing the attention of the patient to his own bodily condition, by causing him to experience acutely, feelings which would otherwise be wholly wanting, or at least, would be but obscurely felt; in other words, impressions become felt of which he would be, in general, unconscious, and moderate impressions give rise to inordinate sensations. Pain, itching, tingling, a sensation of heat or of cold, various uneasy and unusual feelings having reference to the form, size, and weight of parts of the body, without any obvious cause for them, are present; or, there may be a sense of weakness in parts, or an impression of parts being larger, longer, thicker, or stronger than they really are. When the optic nerves and ganglia are the seat of the disease, there are perceptions of light, even in profound darkness, visions of flame when none exist, luminous appearances having no foundation in reality, and visual phantasms and spectres when there is nothing external to give rise to them. When the auditory nerves are affected, there are various noises in the head, a sound of the rushing of waters, of the rustling of trees, of the ringing of bells; or the impression of melodies, of words, of phrases, or of a continued conversation, imposes on the patient by a semblance of reality, when actually springing from an over-excited state of the nervous parts which minister to the function of hearing. In such cases, the disordered mind supports both parts in the dialogue, — believes that the words proceed from without, and from another person, and is enraged at its own accusations. When the nerves of common sensibility distributed in the ear are at the same time involved in the diseased action, sensations of pain, heat, and discomfort also arise in the part. When the olfactory nerves, or the gustatory suffer, odours and tastes of various kinds are perceived; some inhaling with every breeze the smell of decay, or of the dead, or the vapour of sulphur or charcoal; others detecting corruption, medicine, or poison in all foods; others, again, fancying that the quality of the food is not what it is represented to be, or that food is wholly withheld from them, and that they must die of starvation. Hallucinations are pure deceptions of the senses; they are products of the *spontaneous* excitement of sensory nerves, and result from *internal* stimuli, and, in this respect, are distinguished from the excitement which is induced by the impression of *external* stimuli; thus, regarding the *cause* by which they are produced, they must be said to be *subjective*, and not *objective*, though sensation itself is always a subjective act.

In this state, conceptions and the objects of memory are mistaken for perceptions, past impressions or their recombinations by the mind for actual present impressions on the nerves. The fact of the lively phantoms of dreams, on awaking, passing into less

vivid ideas, seems to indicate that the difference between phantasms and ideas is one of quantity merely, it being dependent upon the degree of excitement of those parts of the nervous system which are the seats of perception, conception, and memory. The object of the hallucination is dependent, chiefly on the ordinary employment and education of the organs of sense implicated, and on the class of objects upon which it has recently been exercised; upon the laws of association; and upon the state of the mind. Thus an imaginary monarch will see around him all the splendours of a court; a self-inspired prophet, the several members of the celestial or infernal hierarchy; a visionary military hero, a brilliant staff of field officers, and all the means and appurtenances of war; while a languishing erotomania will receive, and warmly respond to, the addresses of innumerable suitors, whose personal attractions and general excellencies are all duly noted, and not less highly prized.

Hallucinations of the nerves of the special senses react much more powerfully upon the mind than do those of ordinary cerebro-spinal nerves. The mind is always largely involved in the action of the special senses, our ideas being mainly derived from, and intimately related to, the perceptions of those senses; it is for this reason that hallucinations become so fruitful and common a source of delusions.

Hallucinations sometimes recur periodically: a patient, at the same hour of the morning, imagines that she hears the cries of her baby; another, that she receives a visit from a dashing young guardsman; and a third, that she is abused by her relations. The auditory hallucinations of the poet Cowper occurred only in the morning; in other cases they occur only at night. This regular return of hallucinations may be, in part, referred to the law of periodicity which exists in all nervous diseases; and in part, perhaps, to the confident expectation, or to the will, or to the dread of the patient, who expects, or wills, or dreads their occurrence at that particular time.

In cases of hallucination, changes of the nerves of the sense affected have been sometimes observed, the morbid lesion being seated either in the nervous expansion in the organ of sense, in its trunk, or in that part of the brain in which the nerves of sensation terminate.

Hallucinations are often associated with illusions; indeed, when seated in the nerves of common sensibility, they can but rarely be contra-distinguished. When, however, the special senses are involved, hallucinations should not be confounded with illusions, with reproductive fancy, or with delusive ideas. In illusions, properly so-called, the senses represent to consciousness objects really existing, but differently from what they appear to the majority of mankind. In hallucinations, that which is in reality caused by a subjective process, is represented to consciousness as produced by an external object. The external *organ* of sense is essential to the formation of illusions; it takes no *necessary*

part in the production of hallucinations. The cause of illusion is mostly in the receptive *organ* of sense; that of hallucination in the central nervous apparatus of sensation and perception. The distinction between illusion and hallucination has been well drawn by Esquirol. Hallucinations he states to be conceptions of the mind which become propagated to external organs of sense, and there produce the same state as that which is caused by the impression of external objects. Thus, a person affected with hallucinations of vision, sees objects when they are not present; another, affected with those of hearing, hears voices in the midst of profound stillness; a third, tormented by those of touch, feels the blow of an invisible enemy, when no one is near him. On the other hand, he who suffers from illusions may mistake a man for a devil, a relative or friend for an imaginary enemy, or one animal for another. Springing alike from hyperæsthesia of nerves, hallucinations and illusions often coexist in the same person. Reproductive fancy or imagination agrees with the state of hallucination, in that in it there is also a sensorial perception of things without the objects which usually give rise to such perceptions being present to the organ of sense. Hence, for a long time hallucinations were regarded simply as an effect of exalted imagination. This is to some extent true, for it seems probable that between the reproduction of sensory images in memory, imagination, and hallucination, regard being had to the nervous changes on which they depend, there is merely a difference in the intensity of the process. But in imagination we call up ideas, and impart colour and reality to them by an effort of the will; in hallucination images obtrude themselves upon attention, even in spite of the will. From delusive ideas hallucinations are distinguished, not only by the greater clearness and intensity of the images which they represent to consciousness, but also, commonly, by the belief in their objective reality, and by their being dependent upon a disordered action of some part of the nervous sensory organs, *i. e.* either nerves or ganglia.

In hallucinations we must distinguish the morbid state of nerve, and the morbid sensation which it causes, from the signification that the mind attaches to them. The cause to which the mind assigns the effect will vary, as we have already stated, according to the mental character of the person whose nerves are thus disordered. Hence hallucinations may or may not give rise to *delusion*. The former have usually but little influence on the conduct of persons of sound judgment and education, for the abnormal impression of one sense is compared with and controlled by the other sound senses, to which full belief is accorded. Thus, though the phantasm exists, it does so without a belief in its reality. But persons of weak judgment and defective education cannot comprehend the cause of the phantasm, and hence rely implicitly on its objective reality; thus the errors of one sense not being subjected to the correction of the others, the hallucination frequently leads to disorder of mind, and to insane acts and conduct. But

so long as the person is aware of the subjective nature of his disease, so long as he knows that the sensual phantasms which he perceives are not produced by corresponding impressions on the organs of sense, he cannot be said to be insane.

Thus all varieties of phantasms may be present without producing madness, without deluding the judgment, or leading to a belief in their reality.

Bonnet knew a gentleman, gifted with perfect health of body, with candour, good judgment, and memory, in whom, from time to time, when he neither had recently awoke nor was inclined to sleep, figures of birds, carriages, and buildings appeared, independently of all external cause, and moved before his eyes. Sometimes the carpet of his room seemed all at once to change its pattern. The spectral images here, were as distinct as real objects. This gentleman, however, judged rightly as to the nature of the phenomenon, and corrected any first erroneous impressions.

This is but one example; and many such might be cited in which hallucinations have existed in persons, whom to reckon among madmen would raise a suspicion of the accuser's own sanity. Witness Socrates, Brutus, the emperor Julian, Ignatius Loyola, Luther, Cromwell, and Goethe. In all these cases the persons affected were men of strong and powerful minds. Hence hallucinations may be divided into those with, and those without, a belief in their reality; the former deceive the judgment and give rise to delusion, the latter do not.

We again repeat, therefore, that phantasms of the senses are common to men of sound and of unsound mind; but while the former are not influenced in their judgment and conduct by them, the latter are. In the one case they are without influence on the mind, in the other they lead to insane delusion. "The presence of signal and unequivocal eccentricity and hallucination," says Dr. Brown (Report, Dumfries Asylum, 1880. p. 9.), "is compatible with the exercise of sound judgment and brilliant fancy, with the faithful discharge of vast responsibilities, and with the external characteristics of perfect sanity." The word "delusion" in its widest sense, expresses *any erroneous belief* from whatever source derived. Delusions or insane convictions are wholly different from hallucinations and illusions, though they are commonly founded upon them. The conviction or internal assurance of the patient—the judgment, is that which is deluded. That which deludes the judgment and imposes upon the conviction, may be either a morbid sensation—an illusion or hallucination, or it may be an abstract notion which springs from disordered fancy. Thus, to a person when giddy all external objects seem to be in motion, but he knows that they do not really move; when such a person entertains a profound conviction that they are about to fall upon him he has a delusion. The hypochondriac has many abnormal sensations in his abdomen, but he knows that they are simply morbid states of his nerves; when he is firmly convinced that he is preg-

nant, or that he has a man, or an animal, or devils, sorcerers, or robbers enclosed in his stomach, he has a delusion. (Such cases, vide Sir A. Morrison's Lectures, p. 129.)

In some cases, even when the mind is a prey to great delusion, all the senses do not err. Scott, in his "Demonology and Witchcraft," relates an amusing story of a lunatic confined in the infirmary of Edinburgh:—"The house in his idea was his own; and he thus seemed to account for all that appeared incongruous in his imaginary right of property. There were many patients in it, but that arose from the goodness of his disposition, which made him love to see the relief of distress. He went seldom or never abroad; but then his habits were of a domestic nature. He saw little company, but he daily received visits from the most learned doctors in the city, and he could not therefore be much in want of society. With so many visions of wealth and splendour, one thing disturbed the peace of the optimist, and which would indeed have startled most *bon vivans*. 'He was curious,' he said, 'in the selection of his viands, and in the choice of his cook; had three courses every day, besides dessert, and yet, somehow or other, everything he ate tasted of porridge.' This dilemma could be no great wonder to the friend to whom he related this, who knew that everything he ate was made of oatmeal."

The violence, the irrational acts, and the strange antics of the insane, are commonly the effects of some delusion.

The author of the "Autobiography of a Madman," says, "When alone in the breakfast room, I expected to be guided to prayer, but a spirit guided me, and placed me in a chair, in a constrained position, with my head turned to look at the clock, the hand of which I saw proceeding to the first quarter; I understood I was to leave the position when it came to the quarter," &c. P. 41.

"Another delusion I laboured under was, that I should keep my head and heart together, and so serve the Lord, by throwing myself head over heels over every stile or gate I came to; the condition here was, as before, on its being done in *precision and decision*." P. 125.

On one occasion a keeper, in consequence of the resistance of one of the patients, throws him down and nearly strangles him. "When I saw his bloated and inflamed cheeks, and the eye starting out of the sockets, I offered to do anything to rescue him. My spirits desired me to whirl myself round and round as fast as I could, which I did till I staggered against the wall, and nearly fell on the stone pavement." (Quoted in Guy's Forensic Med. p. 252.)

"I knew no malice, no vice. I imagined that they (the keepers) loved me, and were all deeply interested in the salvation of my soul, and I imagined, too, that I loved them dearly. Yet I wrestled with the keepers, and offered to do so with others, and struck many hard blows; sometimes, as one informed me, making it difficult for three strong men to control me; yet, whenever I

did this, I was commanded that they wished me to do so, to prove my faith and courage, but that they were commanded to prove both till they were satisfied of my sincerity." P. 92.

Again, in another place he says (p. 107.), "It was always a great delight to me to get my hand at liberty, even for a moment, and the first use I usually made of it was to strike the keeper who untied me; directed by my spirits to do so, as the return he desired above all things else, because he knew I was proving my gratitude to the God Jehovah at the risk of being struck myself." Van Swieten (Comment. t. 3. Aph. 1094.) mentions a remarkable instance of a delusion leading to irrational actions. "I remember to have seen," says he, "a man of sound mind in every other respect, who having heard that many people had been bitten by a mad dog and had been seized with hydrophobia, in order to escape the disease would not suffer any one to touch him. Not even his affection for his wife and children could make him deviate from this severe resolution."

Arnold (Treatise on Insanity, p. 115.) mentions the case of a man who imagined the whole surface of the earth to be formed of very thin glass, under which he could plainly perceive serpents without number; and would by no means be persuaded to get out of his bed, which he conceived to be an island situated in the midst of this immense glassy expansion, and which, therefore, he dared not to quit, lest, if he should tread on this thin brittle surface, it should break, and suffering him to fall through, he should be devoured or stung to death by the serpents underneath.

When there is no raving or frenzy, the existence of delusion has been suggested as a test of insanity by Lords Erskine and Brougham. The same test is also strongly insisted on by Sir John Nicholl. "As far as my own observation and experience can assist me," he observes, "aided by opinions and statements I have heard expressed in society, guided also by what has occurred in these and in other courts of justice, as has been laid down by medical and legal writers, the true criterion is,—when there is delusion of mind, there is insanity; that is, when persons believe things to exist which exist only in their own imagination, and of the non-existence of which neither argument nor proof can convince them, they are of unsound mind; or, as one of the counsel accurately expressed it, 'It is only the belief of facts, which no rational person would have believed, that is insane delusion.' The delusion may sometimes exist on one or two particular subjects, though generally there are other concomitant circumstances,—such as eccentricity, irritability, violence, suspicion, exaggeration, inconsistency, and other marks and suggestions which may tend to confirm the existence of delusion, and to establish its insane character." Most legal writers concur in this view. Indeed, the prevailing opinion among British lawyers of the present day seems to be, that there cannot be insanity without delusion. But on the one hand, phantasms may impose upon the judgment, and even be

regarded as realities, without the conduct for actions being thereby in any way influenced, in which case the person affected can scarcely be treated as a madman; on the other hand, the experience of those members of the medical profession who are most conversant with the insane, has long since convinced them that madness is as often characterised by disorder of the feelings, affections, and voluntary actions, as by derangement of the judgment and other intellectual faculties.

The nature of the delusions, when present, is modified by many circumstances. The general character and disposition of the patient may influence them, as when an ambitious man conceives himself to be a king or a prophet, and in the former character fancies he is surrounded by regal magnificence, and in the latter by beatific visions.

The *cause* of insanity may give a direction to the delusions; as when a wife abandoned by her husband is firmly persuaded that all men are perjured wretches. The *form* of insanity under which the patient labours greatly affects the delusions. Thus, those who suffer from general paralysis imagine that they are great and important personages, and that they are in possession of great wealth. Every sensation is heightened and exquisite, visions of beauty, sounds of melody, odours of rare fragrance, tastes of delicious flavour, feelings of intense pleasure, delight and delude the mind. Those labouring under mania when the senses are affected, mostly have delusions, the material of which is furnished by the senses of sight and hearing; while in the melancholic, taste and smell are more generally the sources of error, and in the hypochondriacal, touch and common sensibility.

In a classification of the several species of madness, the name of each division, by noting certain characteristic points, should suggest to the mind that particular assemblage of phenomena which is usually met with together in given concrete cases; it should likewise be applicable to forensic cases, should assist diagnosis, and serve as a guide to treatment. Starting from some principle, as the *kind* of madness, its *type*, its *seat*, &c., which should be consistently and uniformly carried through the classification, an arrangement should be sought, at once simple and comprehensive, by means of which the essentially different might be separated, and the similar combined.

But no classification has hitherto been made which is equally applicable to forensic cases, and to classify patients in an asylum. A good arrangement is particularly important in legal medicine, as when a physician is called upon to determine the presence or absence of madness, to enable him to express shortly by a word the state of the individual, and the group of symptoms which are present.

The old authors mostly distinguished only mania and melancholia. Some, indeed, as Ploucquet and De Valenzi, discriminated a great number of varieties, and have made even from 100 to 200 divisions and subdivisions of insanity.

The more celebrated among modern arrangements may be referred to the five following heads:—

1. According to the faculties of the mind. Such is the classification of Heinroth, who divides insanity into diseases of the intellect, of the will, and of the feelings.

2. According to the nervous organs, or parts of the nervous system which are the chief seats of disease. Thus, idiocy and fatuity are by some referred to the head, mania to the chest, and melancholia to the abdomen.

3. According to the temperament; idiocy being deduced from the phlegmatic, folly from the sanguine, mania from the choleric, and melancholia from the melancholic.

4. According to the quantitative, or altered proportion of the mental manifestations; idiocy being regarded as diminished mental energy, and mania as heightened; while fatuity is viewed as an alteration in the manner, and fixed delusion and melancholy as an alteration in the direction of the mental energy.

5. According to the prevailing symptoms; this system is followed by Pinel, Esquirol, Reil, Ideler, Conolly, Morrison, and most English authors.

Some classifications are purely psychological, while others are pathological. The first regard the various anomalies of the mental manifestations, as of the intellect, the feelings, and the will, and whether they be augmented or diminished in activity, or perverted. The second regard rather the various material lesions which are met with in the bodies of the insane, and deduce from these the several species of insanity, according as one or another part may be the seat of disease.

The classification of Fleming, and that of Sinogowitz, illustrate these two modes of arrangement. As regards the classification of patients in asylums, no nosological system can be applicable, and the soundest principle of arrangement, after the furious and dirty have been isolated, is probably afforded by the temper and tendencies of those placed together. The remarks of Dr. Browne (Report, p. 27.) on this subject are so judicious that we quote them entire:—“If the stage of the disorder be the basis of arrangement, a most heterogeneous and inductile mass is brought together; minds of every degree of culture and corruption, of every form of perversity and peculiarity, filled with incompatible and irreconcilable qualities, absolute antipathies, and contagious habits, which are assimilated only by the progress towards health and the period of prostration. If the form of the malady be adopted as the ground of segregation, the violent and irascible maniac will be the centre of a scene of strife and agitation; the melancholic will be surrounded by an atmosphere of gloom and despondency, created by the sorrows and sympathies of his fellow-sufferers; and the listless imbecile must fail to be prompted to activity, or brought within the salutary influence of a higher order of faculties than his own,

if ranked with narrow and impaired intellects. It is absolutely necessary to place the violent in solitude; to secure privacy to the sick, the infirm, the loathsome; but the next step ought to be to form communities which may be actuated by a unity of object, which may contain healthy elements, and the members of which may mutually agree, amuse, enliven, and react on each other."

A perfect classification of madness should be founded upon its proximate causes; but, as we still want a knowledge of the different states of the brain in the different varieties of insanity, until these are ascertained, we must be content with a psychological arrangement or with one according to symptoms.

All the species of madness usually assume one or the other of two principal forms; either one or more of the manifestations of mind are in a state of undue activity, as in mania and melancholia, or they are defective in action, as in dementia and idiocy. The most common varieties of these two principal forms of insanity may, for all practical purposes, be conveniently arranged under the following subdivisions, viz.:—

1. *Mania*, or furious or raving insanity, in which there is a great degree of disorder of the mind manifested by general delirium, with great excitement and violence, the patient being restless and incapable of conversing or talking coherently.

2. *Melancholia*, or lypemania, in which there is great despondency and depression of spirits, with self-accusation and a tendency to suicide, attended commonly, but not invariably, with certain delusions connected with crime and remorse, the judgment being comparatively clear on subjects unconnected with the delusions which are entertained.

3. *Monomania*, in which there is partial intellectual aberration or delusion, with frequently a tendency to excitement and violence, and more or less disorder of the feelings and affections.

4. *Moral insanity*, in which the understanding is but slightly, if at all, impaired; the feelings, affections, temper, habits, and conduct, and what are termed the moral powers of the mind, being alone vitiated and perverted.

5. *Insane impulse*, or instinctive madness, or a liability to sudden impulses to commit acts which are not those of a sane person, the conduct being such as to show a total incapacity of self-control.

6. *Dementia*, or impairment or loss of mind from disease, in which the ideas are absent or obliterated, the mental manifestations defective, and the powers of the understanding greatly impaired or altogether annihilated; such persons are unable to reflect on the consequences of their actions.

7. *Idiocy*, or impairment or absence of mind from congenital mal-conformation of its corporeal instrument.

Recent cases of insanity, according to Dr. Conolly (*Lancet*, ii. 1845, p. 414.), are commonly characterised by visible excitement or depression, and the first natural division of them is into cases of mania and melancholia.

Recent cases of mania present themselves in one of three forms, which may be recognised without much difficulty.

There may be continued excitement and violence, lasting for many weeks, or for many months:

Or, there may be only occasional excitement and violence, connected with some delusions, which continue after the subsidence, or in the intervals of the paroxysms of excitement:

Or there may be strong delusions leading to irrational actions without violence.

To the first two of these forms, the term acute mania may be correctly applied. The third form sometimes takes the character of melancholia, and more frequently resembles chronic mania, and passes into it.

Chronic, like recent mania, also presents itself in three principal forms. In certain cases there is a continual irritability of temper, and a disposition to be violent on the slightest provocation, or even if a word be spoken to the patient.

In others, there are recurrent attacks of excitement every fortnight, every month, or six months, or at longer and not very regular periods, the patient being in the intervals more or less rational, and generally calm:

Or, certain delusions may be quietly, but tenaciously, retained for years, or to the end of life, without violence.

The form of melancholia is easily distinguished, and although it is convenient to speak of it separately, it is only a variety of mania: it may be acute or chronic; exist with or without delusions; be continual, or occasionally marked by paroxysms; or it may alternate with marked maniacal excitement.

Ensuing, sooner or later, and sometimes rapidly, upon these forms of malady, are many and various impairments of the mind, chiefly characterised by the extent of the injury done to the faculties. The general term of dementia imperfectly expresses this large class of cases. The last stage of all these forms constitutes a state of entire prostration of the faculties.

The forms of idiocy are various, but in each case the disorder is congenital.

The complications of mania and melancholia with epilepsy and paralysis require a separate notice, and the forms of insanity incident to the puerperal state and to old age.

The terms moral insanity, monomania, and instinctive or impulsive insanity, are also of far too common occurrence to be passed over without some further explanation of their meaning.

There are some cases of acute mania in which the patients appear to be affected with simple excitement, their faculties being all stimulated as if by the influence of wine, yet without confusion. In some such, the character of the individual is not so much changed, as exaggerated or unduly developed. In other acute and recent cases, there seems to be only a partial excitement, and the patient is confused, and perhaps the subject of delusions. In

others, the character seems to be changed, the affections are perverted, and the propensities morbidly active. In a case of acute mania, the senses are commonly perfect as regards conveying real impressions, even when the sources of delusion in consequence of impressions which are imaginary. Voices are often supposed by the patients to be heard contradicting them, or insulting them, or giving them information, or suggesting particular actions; but they hear real voices, and reply rationally. Imaginary places or persons are also sometimes represented to the sight. But in cases of pure excitement, such delusions often seem to have no existence, all the senses being simply preternaturally acute. The eyes are not unfrequently injected, and have often a peculiar character, apparently produced by the tension and protrusion of the cornea.

Sometimes the face is flushed, but often it is pale and haggard, and covered with moisture, worn, as if by fatigue, and full of a mingled excitement and distress,—fierce and pitiable by turns. The habitual character of the countenance is changed and disfigured, and this state will continue throughout attacks that last for months.

The general excitement of the brain causes the patient to be sharply observant of everything and everybody, and he tries by rapid talking to express the multitude of ideas that crowd upon him, complaining of loss of property, the perfidy of friends, and the plots and violence of enemies, or boasting of boundless wealth, and the notice of the great. The thoughts rapidly succeed each other, and are in many cases incoherent, but not invariably so; even the incoherence of recent cases is not a permanent condition. Frequently the predominance of some sentiment is very conspicuous, as of pride, or love, or fear, or devotion. A loud voice, emphatic gesticulations, singing, and bursts of laughter, serve to relieve the over-active brain. The body is continually in motion; some run rapidly about, and wind their way harmlessly through groups of their companions. But if angry emotions prevail, the most loved friends cannot safely approach them; and there is a continual restlessness and tendency to break, tear, and destroy.

The skin is generally of unequal temperature, and moist; the scalp is hot, especially over the top of the head, the forehead, or above the ears, and the extremities are often at the same time cold. In some cases a peculiar odour of the skin is observable. The hair in many cases stands up on end; the desire for food is sometimes absent, sometimes excessive; the tongue is often white, as if painted, but when there is vomiting or diarrhoea, and a disposition to swallow gravel, it is brown and furred, or scarlet; the urine is high coloured, and often scanty. In the midst of so many indications of excitement, the pulse is quick and feeble, seldom below 96, often as high as 120, variable, and readily increased in rapidity.

Usually the voice is loud and sharp. If in male patients there are tremor of the lips and faltering of speech accompanying excitement

in which ideas of wealth and power prevail, we have to apprehend the existence of a disease known as general paralysis of the insane. Prolonged watchfulness is common in acute mania, the excitement and restlessness continuing day and night for weeks or months. In some cases, however, the patient appears to enjoy natural and refreshing sleep in the middle of the night, being restless and noisy earlier, and waking with renewed excitement at break of day. Some patients are quiet at night and restless by day; others are tranquil in the daytime and noisy all night; some appear to be more excited on alternate days. It is important to bear in mind, that though a propensity to suicide is most commonly associated with melancholia, yet that maniacal excitement is usually mingled with such cases, especially when the suicidal attempts are made; and that in cases of recent mania there are often impulses to self-destruction, either in obedience to some supposed command, or without any previous determination or distinct reason. Dr. Pritchard says on this subject, that the tendency to suicide is not so often a symptom of confirmed and long continued melancholia, as the result of a temporary impulse. The strongly marked and habitual melancholia seldom terminates in suicide. (p. 86.)

Such is the picture of recent acute mania which is drawn by Dr. Conolly, and such we take it is more or less the aspect of the disease during the paroxysm, in all cases of recurrent or intermittent mania, whether the excitement alternate with a state of melancholia, with one of persistent delusion, or with one of more or less soundness in the interval. In cases of insanity, however, which have lasted some time, there is often great violence with very little physical disturbance, which is not the case in recent or incipient attacks.

Other circumstances accompanying the maniacal state are, a disregard of proper clothing, an indifference to cold, an unwillingness to lie in the horizontal position, and a seeming immunity from the suffering which usually accompanies many diseases.

The terminations of the maniacal paroxysm are various; in some instances the excitement is succeeded by sudden depression and death; more commonly, after a longer or shorter duration, it gradually subsides into a state of calm, which is the precursor of recovery, or is followed by a more chronic state of the malady. The prognosis is not unfavourable in proportion to the intensity of the excitement; indeed, the prospect of recovery is greater in some of the more violent than in apparently milder cases. Emaciation in mania is not an uncommon, and is conceived to be a favourable symptom. The return of natural sleep, when attended with amelioration of other symptoms, also warrants a favourable prognosis; but its occurrence without corresponding improvement in the mental state, is a ground of apprehension. Incoherence in the early stages of extreme excitement is of little import; but long continued incoherence, with the abatement of excitement, is indicative of

commencing imbecility, which is scarcely to be accounted remediable. The faltering of the lips or tongue in articulation, which is the earliest symptom of paralysis, also marks an incurable disease. Epilepsy, a not infrequent complication of various forms of insanity, marks a condition admitting no hope of recovery, and scarcely any of amelioration.

Although, strictly speaking, melancholia is but a variety of maniacal affection, which has its paroxysms like mania, and often alternates with great maniacal excitement, it is sufficiently peculiar in its symptoms to indicate a modification of the treatment adapted to cases of mania, and therefore demands a brief separate notice.

The subjects of this form of insanity sit inactive, brooding for ever over some self-accusation, or haunted with some enduring dread. The state of the senses is usually natural, but there seems to be a loss of some sensorial function, in consequence of which pleasure is no longer derived from ordinary impressions. The intellect, also, in the melancholic is usually clear and composed, unable only to resist the morbid depression or the hopeless delusions that spring from it and feed it. No hope points to the future, or lends enchantment to the view. The affections are seldom really impaired, but the patients disavow all kindly feelings, repel the attentions of friends and relations, and are certainly less compassionate than the maniacal; and, too truly in some cases, although in others very unjustly, accuse themselves of loving nobody, of being spiteful, and undeserving of the affections of others; or, again, of having disgraced their families, ruined them, or destroyed their children; or of having sinned against the Holy Ghost, and lost God's favour for ever. These charges against themselves, and these dreadful prognostications they repeat again and again, with the utmost precision and calmness of manner, in many instances with tears and agitation, in others ever maintaining that they are sane, and that the events of the following day will prove that all they say is correct. The chief propensities manifested are to indolence and general indifference; they read nothing, write to nobody, and shun all exertion. One other dreadful propensity is too often active — that to self-destruction.

Numerous cases are to be met with in which, after a short attack of mania, an incurable debility of the brain seems to have ensued, and is shown by total indolence, almost perpetual silence, and general apathy. The subjects of this mental infirmity are seen in its advanced stages, sitting in one position from morning till night; they seldom utter a word; never move but when directed to do so; have no melancholy nor any glad thoughts; and apparently scarcely think at all; living in this way for years, and at last, not uncommonly, dying of phthisis.

The greater number of melancholic patients have dark hair and eyes, long features, and a sallow and sickly complexion, and they are generally thin. The state of the skin is sometimes harsh and dry in a marked degree, but not invariably so. The head is not

usually hot, but the patient often complains of pain, or weight, or heat in it. The limbs are generally of a low temperature, the tongue sometimes clean and natural, sometimes excessively coated and foul. The appetite is variable, and food is not unfrequently refused, from a wish to die, or, more frequently, from absolute repugnance; and this state will alternate with excessive voracity. The bowels are commonly costive, sometimes obstinately so. The pulse is generally slower than in mania, and often excessively feeble; when it is stronger, there is generally hypertrophy of the heart. The voice is almost always low, and very expressive of mental despondency; the language of the patient, even in persons of the poorer classes, is often very striking and elevated, and in educated persons, it is eloquent and painfully affecting. The respiration is not disturbed, but the breath is, in some cases, singularly offensive, having a putrid odour. The imperfect sleep is very remarkable, some melancholic patients being scarcely ever found asleep by night or by day. Towards the afternoon and evening there is, in most cases, a mitigation of suffering; but despondency commonly returns with the morning, and its return is anticipated with dread, so that even the slight cheerfulness of the afternoon becomes, in old cases, grievously mixed with apprehensions of what the next morning will bring.

There are few melancholics in whom the frequent dropping of kind words does not at length mitigate the stony countenance and repulsive manner; but, whilst some find relief in expressing their various sufferings, and in being encouraged to hope for recovery, although professing to believe it impossible, others will only speak when spoken to, and then in a low and depressed voice, rejecting all hope and consolation, and repudiating pity as undeserved. To exclude the world, and to be continually in bed, are among the most ordinary habits of the melancholic, and patients have in this state kept in bed for years.

Monomania, or partial insanity, is that form of mental derangement in which there exists some prominent and fixed delusion, giving a tone to the whole character, feelings, and conduct of the individual. It was to this form of insanity that Locke's famous dictum especially applied, when he said of madmen, that "they reasoned correctly on false premises." The inference that, in matters unconnected with these false premises or delusions, their judgment and feelings were unimpaired, was very generally adopted, especially in courts of law, but has been much controverted of late years, and appears not to be sufficiently well established. We may remark that the question here is one of those to be determined by accurate observation, not one of theory admitting of argumentation. "Nothing," says Dr. Prichard, "can be more remote from the truth than the opinion, that madmen of this description have their whole disorder centred in, and restricted to, one delusive idea. The false impression which occasions the disorder to be termed monomania, is generally a particular symptom

which supervenes on a previously-existing affection of that kind, which I have already described as constituting moral insanity. One illusive notion, or set of notions, is to be traced in the mind, which, for the most part, occupies the attention to the exclusion of almost all other subjects, and is ever uppermost in the thoughts, but a careful inquiry will generally show that the whole mind is diseased. The false impressions of the monomaniae have always reference to himself; sometimes the patient fancies himself in debt, ruined, betrayed, or, on the contrary, possessed of great affluence, and superior to all mankind. Many imagine themselves to be kings or emperors, prophets, or the pope (Priehard, *Insanity in relation to Jurisprudence*, pp. 68. 70.). Or there may be hallucinations of the senses, or illusions of fire, or living beings existing within the body; these latter being often suggested by some actual visceral disease. Sir A. Morrison has particularised several species of monomania, viz.: — 1st. Monomania with elated feelings, as pride, vanity, &c.; 2nd. with religious feelings; 3rd. with terror; 4th. with love; 5th. with hypochondriacal and hysterical feelings and sensations; 6th. with melancholy and depression. We think it enough thus briefly to allude to the possible existence of these several distinct varieties. Cases of this class, whatever the nature of the delusive impressions, and their variety is infinite, all find a place in the arrangement of Dr. Conolly, who has not distinguished them from other forms of mania; and we have thus noticed them separately only with a view of correcting a misapprehension regarding their real nature, and the extent of derangement they imply.

There has always been great difficulty in determining the boundaries between what may not improperly be called *moral* and *medical* insanity. Many ancient philosophers, and especially the Stoics, considered every foolish or vicious person as mad, and only to be distinguished from the medically mad, by the degree of the disorder, and the obvious existence of some bodily cause. For sanity, they contended, can no more exist in a disordered mind than in a disordered body. Moreover, they who are carried away either by ungovernable desire, or even by immoderate anger, are out of their own power; and they are, for this reason, said to be insane, because they are not under the control of reason, to which nature has allotted the supreme government of the mind. This doctrine, in a somewhat modified form, has been also advanced by some modern advocates. In one of the French courts a man was tried for the murder of his mistress, whom he had detected with his rival; and another person for killing his own daughter, because she would not elope with him. M. Bellart, the advocate, in his appeal to the jury, observed, "there are different kinds of fools and madmen; those whom nature has condemned to the eternal loss of reason, and those who only lose it instantaneously, in consequence of some great affliction, of some great surprise, or some similar cause. As for the rest, there is no difference between

the two kinds of madness, except the difference of duration; and he whose head is turned by despair for some days, or for some hours, is as completely mad during his ephemeral agitation as he who raves for years." If such opinions as these were allowed to weigh with a jury, society would be exposed to the most frightful crimes; perhaps the true distinction has been laid down by Dr. Conolly, when he remarks that "the criminal, from passion, *might* have been taught or enabled to restrain himself, whereas the madman cannot be taught or enabled to do so. Thus, the inmates of prisons are *criminals* by their own act, those of lunatic asylums are *madmen* involuntarily."

Moral insanity, according to Dr. Prichard, is a disorder of which the symptoms are only displayed in the state of the feelings, affections, temper, and hence in the habits and conduct of the individual. There is in this disorder no discoverable illusion or hallucination, or false conviction, impressed upon the belief, similar to the delusive or erroneous impressions which characterise monomania. Thus, a gentleman of great talents and influence, had been several times subject to alternate depression and excitement. During the former state he was low spirited and dejected, timid and apprehensive, and even kept his bed for weeks; gradually this state changed; he became then boisterous, irascible, extravagant, and given to intoxication; he would wander about the country in the dress of a horse-jockey, frequented fairs and markets, made the most extravagant purchases of horses and dogs, and associated with people of the lowest class. During these times he was overbearing and impetuous, and has been known to horse-whip his female domestics. Yet this person displayed, in conversation, no trace of a cloud on the understanding; he was under no delusion or hallucination. (Forms of Insanity in relation to Jurisprudence, pp. 31, 32, 33.)

We have here, then, a description and illustration of what has been designated moral insanity, yet the recognition of such a state only amounts to the admission of the fact, that the perversion of the moral principles and feelings, which is more or less apparent in a majority of cases of insanity, may exist alone, and be so aggravated, as to constitute the sole evidence and essence of the derangement. And this fact we take to possess much interest in a psychological point of view, and to be highly important, as bearing upon many legal questions connected with insanity. They who labour under this form of malady have been said to be insane in conduct, but not in ideas; but we see no reason for a nosological separation of their cases from those of such as are insane partly in conduct and partly also in ideas.

For it must not be forgotten, as Dr. Arnold justly observes, that "We cannot easily conceive of conduct without motives, or of motives without notions, and must therefore suppose notions, of some kind or other, to be the immediately antecedent causes of every voluntary action. . . . Whatever these notions may be, there is reason to believe that they are as often the consequence, as the

cause of the increased activity of the brain." (Arnold, v. i. p. 169.) Such people often lament the absurdity and folly of their conduct, but they are unable to resist the impulse which leads them to it. They might say with the poet,—

"Discretion this, affection that persuades.
I see the right, and I approve it too,
Condemn the wrong, and yet the wrong pursue."

GARTH'S *Ovid's Metamorph.* lib. 7. v. 19.

or with Araspas in Xenophon: "I plainly perceive that I have two souls; for if I had but one, it could not be at the same time both good and bad; it could not at once act both virtuously and viciously; or will, in the same moment, to pursue and to avoid the same conduct. But having two souls, when the good one prevails I act virtuously, and when the bad one prevails I disgrace myself by vice."

The observations of Dr. Copland bear out to a great extent this opinion of Arnold's as to the existence of depraved motives and ideas, and consequently disorder of the understanding, in many cases of this form of disease. He observes, "In moral insanity the understanding is by no means wholly unaffected, it is often more or less impaired. The patient is incapable, from habit or impaired nervous power, of exerting those manifestations of mind upon which judgment and self-control depend, with the vigour and precision of health. Besides, the indulgence or the inordinate excitement or sway of the emotions and passions leading to moral insanity, necessarily tends to weaken or to obscure the understanding, and ultimately to overturn it altogether." (Dict. art. Insanity, p. 433.)

In regard to this point it may be remarked, that if it be admitted that the moral faculty, like the intellectual, is an elementary and essential part of mind, there seems to be no reason why it should not be admitted to be equally liable to disorder. But if, on the contrary, it can be demonstrated that the moral faculty is essentially dependent upon the possession and due integrity of the intellectual powers, such an admission can scarcely be made. Did not facts lead us to a contrary conclusion we might, perhaps, suppose, that the moral powers could not be radically disordered without the intellectual being so likewise. For it might be urged that a knowledge of right and wrong is dependent upon the intellect and judgment, and that so long as these faculties are unimpaired, the perception of right and wrong must necessarily remain in the mind. Experience, however, clearly attests that this is an erroneous notion; for not only is it a matter of fact, that the moral affections are often greatly perverted without any disorder of the intellect, but many high authorities declare, that perversion of the moral affections is the symptom which is most constantly observed in madness. Thus Esquirol observes, "there are madmen in whom it is difficult to discover any traces of hallucination; but there are none in whom the passions and moral affections are not disordered, perverted, or

destroyed." (*Malad. Ment.* t. i. p. 20.) And again, "this moral alienation is so constant, that it appears to me to be the distinctive character of mental disorder." (*Ibid.* t. i. p. 8.)

Respecting the mode of origin and nature of this form of madness, the learned author of the *Medical Dictionary* makes the following judicious observations:—"Insanity, however, and especially certain moral states of it, is often nothing more than an exhibition of the natural character and moral disposition of the individual, over which reason has ceased to exercise his control, or which has become remarkably prominent, or even perverted by excessive indulgence and unexercised restraint. The inordinate gratification of passions or moral emotions, not only gradually weakens the influence of reason and of self-control, but also imparts to these emotions a perverted and truly morbid character, and allows them to assume forms at variance with the established opinions and habits of the world, and with the laws of society." (*Copland's Dict. of Med.* art. *Insanity*, p. 432—3.)

Bearing in mind these remarks, it must be admitted that great caution should be exercised in all criminal cases, before the plea of moral insanity be admitted as valid; and in all doubtful cases, the legislator will, perhaps, be inclined to consider punishment as justifiable for the due and efficient protection of society at large, and for the sake of example. It is another question, whether such punishment be justified by the degree of self-control which the morally mad possess. For we quite agree with Dr. Conolly, that "on looking over those remarkable trials in which crimes have been perpetrated under these circumstances, it is impossible not to see that men have been executed for them, whose eccentricities have been greater than those which in other cases have been looked upon as justifying restraint of persons and deprivation of property." Many of those persons may, perhaps, have been quite able to distinguish right from wrong, and have possessed their will unimpaired; but this will has been influenced by depraved sensations and emotions, or by unrestrained or inordinate passions, and hence has become wholly uncontrollable by the reason.

This variety of insanity may manifest itself in almost every kind of unaccountable whim, or wild and extravagant conduct, together with an invincible inclination to pursue every impulse of passion or imagination.

"We owe the recognition of instinctive madness," says Dr. Prichard, "to M. Pinel, who designates this affection as an outbreak of furious madness without delusion. It is very distinct from the form of mental derangement, termed moral insanity, and is best denoted by the expression, instinctive madness, or insane impulse. It appears to be rather an affection of the will or voluntary powers, than of the affections, and does not necessarily imply any change of temper or habits in the individual who is the subject of it. It is not restricted to the single impulse to injure or destroy life, or to the manifestation of phenomena analogous to those of vehemently excited anger. It is displayed in morbid perversion of almost

every other natural propensity, or active principle of the mind. As varieties of this peculiar form of madness we read of phomania, or homicidal propensity, of propensity to suicide, of pyromania, or insane impulse to burn, and of kleptomania, or insane propensity to theft, and doubtless many others might be enumerated." (Priehard, *Insanity in relation to Jurisprudence*, pp. 89., *et seq.*) The acts of violence or outrage consequent upon any of these forms of moral, or impulsive insanity, are often the subjects of investigation in our courts of criminal law; in truth, it is in reference to such inquiries that the study of them is chiefly interesting and important. We must refer to the work of Dr. Priehard those who would learn some of the circumstances by which the act of the madman may be further distinguished from that of the assassin, particulars which we think it inexpedient here at greater length to enumerate. How difficult, yet how necessary it is to draw this line, will appear by the following extract from Dr. Conolly's Croonian Lectures:—

"However liable the plea of insanity may be to abuse, it would be cruel and unjust in many cases to exclude it. Its object is to screen the irresponsible, and therefore the innocent, from the terrible punishments allotted to guilt and crime. In all these cases a court of justice requires from a medical witness a positive opinion as to the state of the accused person at the time of committing the crime, and as to his having been able at the time to distinguish right from wrong. No absolute rule can be laid down for his guidance. Each case must be carefully considered by itself, with all its preceding and accompanying circumstances. No single test can be safely relied upon. There may have been delusion, or no delusion; premeditation and plan, or neither; apparent motive, or no apparent motive. Many insane people act from motives sufficiently apparent, and plan crimes with abundant premeditation, contrivance, and cunning. They exercise these powers often without intending any crime, but in furtherance of some vague or insane object. Nor is the question of the prisoner's knowledge of right and wrong always easily decided. There are not a few individuals in the world whose sense of right and wrong is always dull and incomplete. There are moral idiots; the affections are as imperfect or as wanting in some human beings as any of the faculties of the intellect are in others. But there are also insane persons, and not a few, who do know right from wrong, and yet who would do the wrong, if permitted. They know that murder is wrong, and yet would kill certain persons, if at large. It is most difficult in some of these cases to draw a distinction between insanity and crime. Such excuses for crimes cannot, it is evident, be admitted without danger, yet sometimes they do exist, and therefore ought to be admitted. In the numerous gradations of intellect and feelings in different human beings, there must be a point, as we descend from the brightest intellects towards the perfect idiots, at which responsibility ceases, and impunity begins.

No one but God can determine this point in every case. The judges, however, in their answers to the questions propounded to them by the House of Peers, shortly after the trial of Mc Naughten, declare that to establish a defence on the ground of insanity, it must be clearly proved that the insane party at the time of committing the act was labouring under a defect of reason from disease of the mind, as not to know the nature and quality of the act he was doing, or if he did know it, to know that he was doing wrong."

In dementia, perception, the idea-forming faculty, memory, judgment, and comparison are all impaired or lost. "An imbecile or demented person," says Dr. Copland (Diet. art. Insanity, p. 460.), "is incapable of forming any opinion or judgment, because external objects make too feeble an impression; because the organs of transmission have lost a portion of their energy, or because the brain itself has no longer sufficient power to receive and to retain the impression transmitted to it; hence the feebleness, obscurity, and incompleteness of the sensations and perceptions. Being unable to form a just idea of occurrences or objects, the demented person cannot compare them, or exercise abstraction or association of ideas; his mind has not energy enough to exert attention, or any mental operation necessary to the integrity of its functions."

Dementia may be a primary affection, or it may be consecutive upon other disorders of the mind or brain, upon protracted mania, apoplexy, epilepsy, paralysis, &c. Three varieties of dementia have been pointed out by M. Esquirol, — the acute, the chronic, and the senile. The first is sudden in its attack, and is mostly a curable affection; the second is sometimes a primary disorder, but much more frequently consecutive upon the diseases already mentioned, it is rarely curable; the third variety creeps on with advancing years, and is characterised by a gradual failure of the powers of the mind.

The original meaning of the word "idiot" is a "private man," or one who has not a public office. It was subsequently used to signify a person incapable of such an employment, and one of mean capacity. In the old writs, "idiota" denoted not only natural fools, but all persons labouring under such a degree of mental disorder and incapacity as to be unable to take care of themselves and their property, and to fulfil the common duties of their station. Lord Coke says, an idiot is he "who from his nativity, by a perpetual infirmity, is *non compos*."

Blackstone regards an idiot or natural fool as one that hath no understanding from his nativity, and therefore is by law pronounced as never likely to obtain any. But a man is not an idiot, he states, if he hath any glimmering of reason, so that he can tell his parents, his age, or the like common matters. Thus, according to Coke and Blackstone, an idiot must have been such from his birth; but this distinction has not been always observed, and the term idiot is

commonly used when the defect of understanding is congenital, or induced at an early period of life, by disease. To this latter class of cases, some authors have exclusively applied the term imbecile.

An idiot is thus defined in the form of a writ: — “He who shall be said to be a sot or idiot from his birth, is such a person who cannot account or number twenty pence, nor can tell who was his father or mother, nor how old he is, &c., so as it may appear that he hath no understanding of reason what shall be for his profit, or what for his loss; but if he hath such understanding, that he know and understand his letters, and read by teaching or information of another man, then it seemeth that he is not a sot or natural idiot.”

The complication of madness with general paralysis merits a separate notice. This affection is characterised by a general and progressive loss of power in the voluntary muscles, and the presence of certain peculiar delusions relating to wealth, grandeur, and excessive self-esteem. This form of insanity attacks males almost exclusively. It commences with tremor of the upper lip, with loss of power over the muscles of the tongue, and indistinct articulation. The muscles of the extremities then become involved in the disease, the walk becoming vacillating, and the motions of the hands and arms unsteady and tremulous. The sensibility becomes impaired, the face flaccid and without expression, the excretions are voided involuntarily. At last, the patient retains the supine posture, and becomes unable to feed himself; bed sores make their appearance, and death ensues from exhaustion, coma, or convulsions. The mental disorder mostly precedes, but in some few instances follows, the paralytic symptoms; at last, it assumes the form of confirmed dementia. Death, in this disorder, is said to be rarely delayed beyond the third year, but there are certainly numerous exceptions to this rule.

The prognosis is most unfavourable, but few instances of recovery being on record.

Causes. — The causes of madness enumerated by authors are, affections of the mind, such as anxiety, grief, love, jealousy, anger, disappointment, ambition, pride, misfortune, engagement in hazardous speculations, religious terror or enthusiasm, the frequent and uncurbed indulgence of any passion, or violent emotion and abstruse study. Intemperance, especially in the use of spirituous liquors, a sedentary life, the suppression of periodical and occasional discharges and secretions, repelled eruptions, injuries and malconformation of the head, excessive evacuations, mercury largely and injudiciously administered, and paralytic and epileptic seizures, are likewise enumerated as remote causes.

Mania sometimes arises in consequence of painful protracted parturition. Certain diseases of the febrile kind, particularly phrenitis, have been found at times to occasion madness, where their action has been very violent or accompanied by severe delirium.

That insanity originates more generally in a corporeal cause than is allowed, must, I think, be admitted: it is not unfrequently connected with derangement of the digestive and biliary organs; and it often arises from sympathy with other parts morbidly excited and distant from the brain, and this action may be reciprocally exerted.

In many cases mania proceeds from an hereditary predisposition or constitutional bias. Indeed, it is an indisputable fact, that the offspring of insane persons are more liable to be affected with insanity than those whose parents have enjoyed sound minds: which shows that a predisposition or constitutional bias to the disease may be entailed by either parent. Moreover, it frequently occurs that the descendants from an insane stock, although they do not exhibit the broad features of madness, will yet discover propensities and eccentricities equally disqualifying for the purposes of life, and destructive of social happiness.

Some late writers* on mania have, however, presumed to deny the fact of hereditary predisposition, or constitutional similarity between parent and progeny; but this surely is to fly in the face of truth, and to inculcate a doctrine very injurious to society, by throwing individuals off their guard, and encouraging them to intermarry with the descendants or offspring of insane persons.

One who is aware of a decided bias in his own person towards mental derangement, ought to shun the chance of extending and of perpetuating the ravages of so dreadful a calamity. A man so situated, in incurring the risk of becoming a parent, involves himself in a crime which may not improbably project its lengthened shadow, — a shadow, too, which widens in proportion as it advances, — over the intellect and the happiness of an indefinite succession of beings.† When, as it sometimes happens, an hereditary disposition or bias to this disease appears to sleep through one generation, it will often be found to awaken in the next with even aggravated horrors. Should the child of a maniac escape his parent's malady, the chance is small that the grandchild will be equally fortunate. The continued stream of insanity, although it occasionally conceals itself for a time, may soon again emerge to our view. Strictly speaking, however, it is only the tendency to insanity that is inherited; or, in other words, a greater facility than ordinary to be acted upon by those external circumstances that are calculated to produce the disease. Such is the proper light in which we should view what are termed hereditary predisposition and hereditary disease.

An acute writer‡ on the causes and cure of insanity, has very properly animadverted on the inconsistency of some physicians in

* See Dr. Adams's Treatise on Hereditary Diseases; and Essay on Insanity, by George N. Hill.

† See Essays on Nervous Affections, by John Reid, M. D.

‡ See Observations on Insanity, by W. S. Hallaran.

admitting an hereditary predisposition to mania, and at the same time denying that it is an hereditary disease.

All inquiries respecting the proximate cause of mania are involved in such a cloud of obscurity, that I shall not venture to advance any opinion on it. Many physicians have attempted, indeed, to account for the production of insanity from the morbid appearances observed on dissection; but these vary exceedingly in different cases; and even when they are the most marked and constant, they only serve to denote the progress and ultimate effects, rather than the actual condition wherein the disorder consists. We only know for certain, that in the majority of maniacal persons that have been opened after death, more or less organic disease has been found.

There can be no doubt that certain changes of the organic molecules of the nervous centres occur simultaneously with every operation of the conscious mind; that every affection and every passion must produce a profound modification of the brain. Moreover, reasons are not wanting which lead to a belief that these changes are not dissimilar in kind to those which ensue when cerebral action results from the impression of physical stimuli. When their action is too frequently repeated, or their operation long continued, both physical and psychical stimuli give rise to undue waste of nervous tissue, (just as inordinate muscular movements are accompanied by corresponding waste of the tissue of muscles,) derange the normal nutrition, and consequently greatly modify the structure and composition of the entire cerebral mass, and thus lay the foundation of those organic changes, or that disordered function, of which an irregular manifestation of the primitive powers of the mind may be viewed as the outward expression.

Thus, insanity, in any of its forms, may be caused, not only in this way, by primary or idiopathic disease of the brain; but it may also arise from indirect or secondary or consensual disorder of the cerebral actions induced by previous disease in some other organ or tissue. Insanity, indeed, though it does not always spring from actual disease of the brain, must ever be regarded as the expression of functional disorder of that organ. Ranking first among the nervous centres, and being in relation with the largest amount of peripheral nerves, the brain must of necessity, and by reason of this connection, be more or less affected by the state of the ganglia, the cord, filamentary nerves, and the parts in which they ramify. Abnormal conditions of the organs of circulation, of digestion, assimilation, and reproduction, all powerfully influence thoughts and feeling.

The opinions which have been hitherto advocated by authors respecting the nature of madness, may be referred to a threefold category. By some, madness has been viewed as a disease of the immaterial mental principle, or of the mind itself; by others, as a purely corporeal disease; while, by others, again, it has been regarded as an affection partly of corporeal, partly of psychical

origin. The first may be termed the psychical theory of madness, the second the somatic, and the third the mixed theory.

The psychical theory assumes an independent operation of the mind, and views its disorders as purely psychical derangements. The arguments urged in favour of this view are, that the mind is the part immediately affected in madness, and that bodily disease, when present, is but a secondary and accidental complication; that psychical causes—as love, pride, anger, &c.—produce madness quite as frequently as physical causes; that corporeal diseases of all kinds, both of the brain and of other organs, not unfrequently occur, without the slightest disturbance of mind, and *vice versâ*, and that a man is not called mad because his brain is excited or his stomach disordered, but because he thinks, judges, and acts absurdly; that mental remedies have frequently cured madness, and that pharmaceutical agents act only through the mind,—through pain, terror, diversion of the thoughts, &c.; that there is no one morbid lesion which can be said to be characteristic of madness; and that there cannot be any necessary relation of cause and effect between corporeal disease and insanity, inasmuch as we find every kind of bodily affection occurring sometimes *with*, sometimes *without*, now with *one*, now with *another*, form of mental aberration.

The somatic theory considers the manifestation of mind to take place through the brain, and views madness as the result of derangement of physical structure, some supposing the brain alone, others the entire nervous system, others again another part of the organism, to be the seat of the primary disease. This system is supported by the following arguments:—The mind being, according to the psychical theory, a simple, independent, indivisible force or energy, cannot become the subject of disease, and we reduce and degrade it to the level of matter by supposing it to be susceptible of alteration. The term disease necessarily implies a material substratum; for how can that which is not matter be modified, altered, or disordered? Mind is only manifested to us through the medium of matter; and hence analogy would lead us to think that a difference in the manifestation of mind would involve, as a necessary consequence, a change in the medium through which it is made known to us—viz. of the brain, which is its material instrument.

The greater part of the causes which produce mental disorder—such as blows on the head, poisons, &c.—act physically on the brain; and psychical causes, it is contended, only affect the mind through the medium of the body. In all forms of madness there are symptoms of bodily disease, although they may sometimes be overlooked during life, as may likewise, the morbid lesions upon which they depend, after death. Madness is cured by material remedies; and psychical means, even when effectual, which is not often in severe cases, act upon the bodily frame. Mental states which are very analogous to madness,—such as the delirium of phrenitis, and of fever, the delusions of nightmare, and of hysteria,—can be proved

to be dependent upon corporeal causes, and are remediable by medicines which act upon the body. The causes, therefore, which produce the chronic delirium of mania must be 'of the same nature as those which cause the acute delirium of phrenitis, or the fugitive delirium which arises from the exhibition of anæsthetic vapours, or of many poisons.

The mixed theory ascribes madness equally to the mind and to its material instrument; that is, it refers it to a derangement of the normal reciprocal relation which obtains between the mind and its organ.

The following arguments are adduced by the supporters of this view:—Madness is not a disorder of the higher faculties of mind, but merely of its lower or sentient sphere. For the insane have indeed erroneous perceptions, but in many cases as sound a judgment, and as acute powers of discrimination as the sane: many of them, moreover, are very religious and conscientious. The sentient sphere of the mind bearing the character of necessity, the psychical affection is hence compulsory. Thus, my optic nerve being exposed to the stimulus of light, or my auditory nerves to the impression of sonorous vibrations, or any of my nerves of common sensibility to the action of fire, the resulting excitement of nerve and brain which produces a perception of light, sound, and pain, will surely and inevitably supervene, even in spite of willing the contrary. I have no power over the perception; it ensues as a necessary consequence of the impression that is conveyed to the sensorium, by virtue of certain laws, over the operation of which I have no control.

Now in insanity we usually find great disorder of the sentient region of mental life. The organic parts which are concerned in arousing consciousness, and those affecting the perceptive faculties—viz. the sentient feelings and impulses—react otherwise than in the normal state upon the application of the usual and ordinary stimuli. But this is not all: there is another and an additional factor which influences the abnormal product, and that is the mind itself. Thus both the two factors concerned in the production of our faculties are at fault in madness. Against the psychical theory the advocates of the mixed hypothesis urge that mental diseases cannot be seated in the region of the intellect, for this would be delusion and error, or impiety; or in the moral faculty, for this would be sin or vice; and that these, though they may be symptoms or causes of madness, do not certainly constitute it. For even delusion, though a common, is not a constant symptom of madness, for it is often present without insanity; and many insane people admit and deplore the absurdity of their notions, although they cannot free themselves from them. Still less can it be said that insanity is seated in the understanding, for its affections are credulity, prejudice, &c.; nor in the feelings, for these can be only vehement, susceptible, tender, hard, or obtuse; nor in the temper, for its proper affections are the passions; nor in the will, the

disorders of which are caprice, irresolution, temerity, imperiousness, &c. All these morbid psychical states, though often encountered in the insane, do not form the proximate cause and essence of the disorder.

So far as conclusions admit of being drawn from the preceding considerations, the following may perhaps appear to an unprejudiced reader as a tolerably near approximation to the truth.

Mental diseases being diseases of the material organ of the mind—*i. e.* of the brain,—they must of necessity all depend upon some structural or functional lesion of this part of our frame, for the psychical principle cannot be their seat. The disturbance of the cerebral functions which characterises insanity may be produced by idiopathic cerebral disease, or by an abnormal state of some other organ or tissue, whereby disordered action of the brain is set up and maintained, in every instance an abnormal condition of some material part being the primary cause of mental derangement.

Madness, therefore, is always a symptom of corporeal disease: its essence consists in disordered function of brain neurine; and it is curable in as large a proportion of cases as other severe nervous diseases.

Hence, although in many cases of insanity we cannot succeed in detecting any abnormal appearances in the brain, yet this fact is by no means to be used as an argument against the corporeal origin of the disease. For the same thing obtains in some instances of concussion, in which, although the mental manifestations were disordered or suspended during life, no morbid appearances can be discovered in the brain after death. This indeed is a common character of all nervous diseases, and by no means a peculiarity of mental affections. Dr. Watson says, “The very same symptoms accompany alterations of the brain, apparently of a very different, nay of the most opposite kind; and on the other hand, changes of structure, which, as far as we can perceive, are absolutely identical in their nature, are associated in different cases with totally different symptoms: *and, more frequently than not, nervous diseases are attended with no alterations of structure appreciable by our senses.*”

How readily the functions of brain neurine may become disordered we are taught by the effects of anæsthetic agents. The contact of blood impregnated with chloroform not only suspends sensation, but also so affects the nervous substance as to induce a great degree of disorder in the mind. For not only may the senses be deprived of the faculty of taking cognizance of external impressions, but they may also be brought into a state in which, reacting in an abnormal manner on the application of ordinary stimuli, they convey false notions to the mind, and thus, becoming sources of deception rather than of information, lead to delusion.

Moreover, the parts concerned in sensation are not the only nervous organs which are affected by anæsthetics. In a similar manner the material instruments through which the reproduction

of ideas takes place may be rendered unfit to perform in a due manner their function, delirium being a common effect of the administration of anæsthetic vapours. By means of these latter agents, indeed, we can induce delirium or coma as surely as by a blow on the head. We can not only bring on either state at will, but can also restore the lost or deranged function, when we wish to do so, by the withdrawal of the producing cause. In such cases we know that some abnormal state of brain, which is transient in its nature, has been induced, and we have no reason to suppose that the mind itself has in any way suffered; its manifestations simply become suspended or deranged because the material parts through which it acts are so modified as to be incapable of performing their usual functions.

Prognosis.—From the predisposition or bias entailed by persons of an insane stock on their children, and the great pressure of the times, the extensive and hazardous speculations in which commercial men engage, the enthusiasm of certain sectaries, and the various exciting causes which have been enumerated, mania appears to be a disorder of much more frequent occurrence than formerly. The supposition that insanity is an increasing disease has, however, been disputed, and particularly by the late Dr. Willan, Dr. Bateman, and Dr. Heberden. Dr. Burrows, in his learned treatise on insanity, has also advanced statements, with the view to refute the conclusion that this malady is on the increase. It is the opinion of Dr. Conolly that insanity is increasing beyond the proportion of an increasing population. (*Croonian Lectures*, *Lancet*, 20th October, 1849, p. 415.) At any rate, it is a soothing reflection that recoveries from insanity are much more numerous than formerly, owing, no doubt, to the improved mode of treatment which is now adopted.

When madness has arisen in consequence of some other disorder, and when its attacks are slight, and do not return very frequently, a radical cure may possibly be effected; but when it takes place in consequence of an hereditary disposition, or is attended with great melancholy, and a fixed attention to one particular object, be it love or religion, we should not entertain so much hope.

In those cases where mental derangement has originated from a physical state that exists only for a short period, or from the sudden impression of an unlooked-for calamity, an expectation of cure may for the most part be not unreasonably entertained; but when, on the other hand, by a life of debauchery and frequent intoxication, or the corroding operation of any chronic passion—such as love, jealousy, &c.,—the mind has been disorganised, there is in general little hope, from either medical or moral regimen, of an entire and permanent restoration. Where there is a predisposition to mental derangement from an hereditary bias, external and accidental causes act with more violence, and more readily overturn reason; and such cases are usually most difficult to cure.

Patients who are in a furious state recover in a much larger proportion than those who are melancholic. Insane persons are found to recover in proportion to their youth, and more frequently in first than in subsequent attacks. The intervention of lucid intervals is always an important matter; for in proportion to the frequency, duration, and steadiness of these, are we warranted to think favourably of the issue. Under every form of the disease the hope of a recovery is usually proportionate to the time which has elapsed from its actual commencement to the period of its being subjected to a regular treatment—advanced age always rendering the prognosis more unfavourable; for a radical cure has scarcely ever been effected in the instance of a hoary-headed maniac. The probability of recovery is much diminished after the insanity shall have lasted longer than twelve months, as by this time the morbid action seems, for the most part, to tend towards morbid structure, which, when arrived at any height, will prove beyond the reach of medicine or of medical treatment. Where insanity supervenes on epilepsy or palsy (which is often the case), a cure is seldom, if ever, effected. Should catalepsy follow upon insane paroxysms, the complaint most commonly is fixed for life; and to this occurrence females are more liable than males. Chronic dementia and idiocy are mostly incurable.

Women affected with mania recover in a larger proportion than patients of any other description; indeed, the insanity subsequent to parturition is generally curable, if the curative attempts be rational.

Furious insanity, after continuing for a longer or shorter period without relief, commonly terminates in fatuity. This destruction of mind is almost always incurable. Sometimes, however, young persons, after having remained in a state of complete fatuity for months, or even years, are suddenly seized with a paroxysm of excitement, on the cessation of which they are restored to reason.

By degrees the ideas of a maniac become more settled, until either the morbid impressions altogether disappear, or they remain so firmly fixed, that he sinks into the condition of an incurable lunatic. After a lapse of years the patient dies, and often in a comatose state. Where the excitement is very great, or the paroxysms of considerable length, he is sometimes carried off early in the disease by exhaustion.

It has been observed by those who superintend lunatic asylums, that the number of females annually brought in considerably exceeds the number of males. The natural processes which women undergo—of menstruation, parturition, and of preparing nutriment for the infant, together with the diseases to which they are subject at these periods, and which are frequently remote causes of insanity, as likewise the sedentary life they usually lead, and the exquisiteness of their feelings—may perhaps serve to explain their greater disposition to this malady.

The morbid appearances most generally to be observed on open-

ing the heads of maniacal subjects are, an opacity and thickening of the arachnoid and pia mater, a preternatural amount of blood in the membranes as well as the substance of the brain itself, together with an effusion of water between its membranes and convolutions, and into the ventricles. Exclusively of these, ossification of some of the arteries, or a preternatural hardness or softness of the substance of the brain, is occasionally observed. Mania has more frequently been found on dissection to be connected with a morbid state of the brain and its membranes than the other forms of insanity; but whether this peculiar state ought to be regarded as the cause or effect of the disease, is a point not yet satisfactorily ascertained.

From the anatomical observations of Dr. Greding, it appears that the greater number of insane people fall into a state of atrophy or decay towards the close of their life, as it was observed that, of one hundred maniacs, sixty-eight died in this way. We are informed by the same gentleman, that consumption from an ulcerated state of the lungs appears to be another disease which frequently terminates the existence of insane people; as it was found that of one hundred maniacs there were forty who laboured under phthisis pulmonalis.

Mr. Haslam has observed, that maniacs are more liable to attacks of apoplexy and palsy than other diseases: they are also frequently affected with diseases of the uterus, ovaries, liver and intestines.

Insane people are very subject in the winter to mortification of the toes, feet, and nates, when closely confined, which shows their susceptibility to the effects of cold. The helpless, insane, and bed-ridden patients are very liable to be attacked with a mortification of the buttocks. It therefore appears a most advisable point that all asylums for the insane should be warmed by means of flues and heated air. In the internal economy of all such buildings this would be an important and humane improvement.

“Several hundred post-mortem examinations have in the last ten years been made at Hanwell, sometimes with the assistance of eminent anatomists, and always with care,” says Dr. Conolly. The results have been recorded; and yet on looking over the voluminous register, all that we can say is:—

1. In recent and acute mania in young or strong persons ending fatally, the grey matter is highly injected with blood, and the brain and membranes generally present marks of greatly increased vascularity; but these appearances are not confined to acute cases, presenting themselves occasionally in chronic cases also, without any previous modification in the symptoms preparing us to expect them.

2. In recent and acute mania in feeble cases these appearances are less marked.

3. In a large number of cases, whatever the phenomena have been during life, the cranium is found either thicker or thinner than natural; the dura mater strongly adherent to the cranium;

the sac of the arachnoid full of serous fluid; the anterior cerebral lobes being shrunk; the grey matter pale; and the white matter showing few or no bloody points. In several cases there existed softening or hardening of some portions of the brain, injection or paleness of the choroid plexus, with attached vesicles; the pineal gland, or pacchionian glands, altered in size or structure; there are patches of effused blood on the membranes, and other partial affections are observed belonging to such cases.

The general form of the head is commonly defective; the anterior portion is narrow, the vertex high, the occiput large; sometimes the vertex is flat, or the head very narrow, as if squeezed, until the top presents a ridge with sloping sides. The two sides of the head are, in many cases, less symmetrical than usual.

In cases of general paralysis of the insane, the head is generally well formed.

Treatment.—In the treatment of insanity in its various forms, but little of novelty can be advanced. That a great deal may be done, however, by the judicious use of medicines, and by proper management and moral culture, there can be no doubt. The circumstance of the proximate cause of the disease being an altered action of the nervous structure, or a molecular change of the nervous tissue, of the nature of which we are ignorant, constitutes a great part of the difficulty attendant upon the treatment of affections of the mind, since we want principles upon which we may form any satisfactory indications of cure. We have seen that post-mortem examinations have afforded us no means towards elucidating the difficulty; nor can we venture to hope that much light will ever be thrown on the essence of madness by dissection, however much observations may be multiplied; for altered action may exist in neurine for a long period without giving rise to altered structure; and experience attests that the *functions* of the nervous centres may be disordered in the highest degree, or even suspended altogether, without any appreciable alteration of the nervous tissue.

Against mere insanity, unaccompanied by obvious bodily derangement, medicine appears to be almost powerless; but where an insane person happens, as he usually does, to be diseased in body as well as in mind, medicine, or, more strictly, medicinal treatment, is not only of as great importance to him as to any other person, but much greater, as diseases of the body are commonly found to aggravate those of the mind. In acute cases of mania, patients require speedy, as well as regular, assistance, to prevent that disorganisation which might lead to protracted or incurable insanity.

General blood-letting is never indicated by insanity alone, but it may exceptionally be useful for the cure of other contemporaneous diseases with which the insanity is liable to be complicated. In uncomplicated madness it is not merely useless, but highly prejudicial: not only does it fail in curing mania, but it often converts it into hopeless and incurable dementia. Indeed, all those who

are entrusted with the management of the insane now concur with singular unanimity in condemning general blood-letting, except in some very rare and very peculiar cases.

Local bleeding, by leeches or cupping, and cold to the head, are approved of by some superintendents of asylums in cases where there is great heat of the scalp, flushed face, headache, giddiness, and tinnitus aurium. Some few use emetics and strong purgatives; most entertain a high opinion of an assiduous and alternating use of mild purgatives and aperients; and nearly all, when there is absence of vascular and febrile excitement, advise narcotics.

The warm bath often diminishes excitement, when not contra-indicated by apoplectic symptoms or hæmoptysis.

Cathartics* are of the utmost importance in the treatment of insanity, but more particularly when the excitement is great; and as constipation is a common occurrence with maniacs, those who have their superintendence should regularly inquire into the state of their bowels. In obstinate cases, the chloride of mercury, joined with a few grains of the extract. colocynth. comp., may be used. In mania, and other cases where the administration of any medicine in a bulky form is extremely difficult, it would seem that the croton oil might be substituted with benefit. Due action of the bowels may probably be excited by one drop of it being applied to the tongue. In periodical mania, the paroxysms are usually preceded by obstinate costiveness; and a dose or two of some purgative medicine, at an early period, will frequently put a stop to the progress of the attack; which fact ought to have due weight. Moreover, it has frequently happened that a speedy convalescence has ensued in mania after the coming on of a diarrhœa, and in a few instances it has proved a cure, but it too often cures by death.

Opium, when administered to madmen during a violent paroxysm, has often been found to procure sleep; on the contrary, in some rare cases, it has rendered those who have taken it much more furious; to prove serviceable in maniacal cases, it ought to be administered in a full dose. It is one of the most valuable remedies in the treatment of mania.

Where the patient appears much reduced from the want of sleep, we may make trial also of the acetate of morphia, in the dose of half a grain, or the extractum hyoscyami, in the dose of five or ten grains, in the form of a pill, which may be washed down with about ten drachms of the mistura camphoræ, which is a medicine much recommended in maniacal cases when conjoined with narcotics.

There have been occasionally impressions made upon the imagination of the deranged as to afford hints, perhaps, for enlarging these

* 1. R. Infus. Sennæ Comp. f. ℥jss.

Potassæ Tartrat. ℥ij.

Tinct. Jalapæ, f. ℥ij.

Syrup Rhamni, f. ℥ij. M.

f. Haustus catharticus.

* 1. Take Compound Infusion of Senna, one ounce and a half.

Tartrate of Potass, two drachms.

Tincture of Jalap, two drachms.

Syrup of Buckthorn, one drachm.

Mix them for a cathartic draught.

accidental occurrences into somewhat more of a systematic code than has hitherto been essayed.

"I believe," says a modern writer (*Hill on Insanity*), "that it will frequently be enough if a dexterous performer out-herod the very extravagancies of the patient, or take up others as similar as possible. Simon Morin was shamed out of the idea of his incorporation with Jesus Christ by the folly of another madman, who supposed himself God the Father. A person who believed that he had been guillotined, and fitted with a wrong head, was cured by a jocular convalescent in the Bicêtre, who managed to turn the conversation on the miracle of St. Denys, who carried his head under his arm, and kissed it as he walked along. The lunatic vehemently maintained the possibility of the fact, and appealed to his own ease. 'But how,' said his companion, in a tone of mockery, 'did St. Denys contrive to kiss his own head? With his heel?' It is true that as you drive insanity out of one of its forts it often retires to another; but there let it be attacked by the same arms. I perceive, indeed, that their use requires discretion, and that when one line of attack does not succeed another must be tried. But none ought to meddle with the mad who have not discretion and genius into the bargain."

"A noble person having believed he was dead, insomuch that when his friends and familiars besought him to eat, he still refused all, saying it was in vain to the dead; but when they doubted not but that his obstinacy would prove his death, and this being the seventh day from whence he had continued it, they bethought themselves of this device: they brought into his room, which on purpose was made dark, some personated fellows wrapped in their winding-sheets, and such grave-clothes as the dead are apparelled with; then, bringing in meat and drink, began liberally to treat themselves. The sick man, seeing this, asks them who they are, and what about. They told him they were dead persons. 'What then,' said he, 'can the dead eat?'—'Yes, yes,' said they, 'and if you will sit down with us, you shall find it so.' Straight he springs from out of his bed, and falls to with the rest." (*Turner, Of Diseases of the Skin*, p. 167.)

In the management of the insane, the great objects to be aimed at are, in the first place, that the invalids be separately and properly classed, both in respect to their ages, sexes, condition in life, and kind or degree of their disorder. Those who are violent and noisy, and dirty, should not be placed in the same room with those who are quiet and orderly, or in a state of convalescence. Secondly, free ventilation, so ensured as to guard against undue exposure to the inclemencies of the weather. Thirdly, a rigid system of cleanliness. Fourthly, such a judicious regulation both of mental and bodily exercise as shall excite without fatigue, and exhilarate without exhaustion: and, lastly, a combination of tenderness, lenity, and conciliation, with proper firmness at the same time, on the part of the keepers.

It should always be the object of the superintendent to gain the confidence of the patient, and to awake in him proper respect and obedience, which is to be effected by discipline of temper and dignity of manners. Tyrannical severity may excite fear in the lunatic, but it will be mingled probably with contempt. In the management of insane persons, the superintendent must endeavour to obtain a moral ascendancy over them. When this is once effected, he will be enabled on all future occasions to direct and regulate their conduct according as his judgment may suggest.

Prudent management will generally restrain fury, and sometimes restore rationality very speedily. The patient must always be treated with lenity and kindness, and with the manners due to his station in life; for it is obvious that a system of rigid order and discipline, combined with lenity and conciliation, is the only rational and successful method of combating the extravagances of lunatics.

To obtain a salutary influence over the wanderings of a mania, we ought first to secure his confidence. This cannot be done without behaving towards him with a delicacy due to his unfortunate state, which for the most part ought to be regarded, not as an abolition, but as a suppression merely, of the rational faculties. There is indeed ground to apprehend that fugitive folly has been too often converted into a fixed and settled frenzy; a transient guest into an irremovable tenant of the mind; an occasional aberration of intellect into a confirmed and inveterate habit of dereliction, by a premature and too precipitate adoption of measures and methods of management, which are only necessary in cases of extreme desperation.

Experience has now abundantly proved that the best effects have resulted from a system, the prevailing feature of which is kindness, combined with certain degrees of indulgence.

Under slight attacks of mania, where the degree of irritation is trifling, as well as during a state of convalescence, it will not be necessary to confine the patient within doors in fine weather; taking care, however, at the same time, to put it out of his power to escape, or do any injury either to himself or others. His mind is to be soothed, and his attention diverted, as much as possible, by getting him to engage in some exercise or amusement that will employ both body and mind at the same time, and that will divert the latter from pursuing any train of thought. He should be recommended to avoid as much as possible thinking upon questions of a perplexing and intricate nature. In melancholia, this plan will be doubly necessary; and we may likewise allow entertaining books, cheerful company, amusing scenes, music of the exhilarating kind, playing at billiards, or even cards. If the patient is fond of gardening, the employment of some portion of his time in this way will prove both healthy and agreeable.

It has been observed, that, in all institutions for the insane, the male patients who assist in digging, planting, weeding, wheeling, wood-cutting, and making fires, &c., and the females who are em-

ployed in washing, ironing, and scrubbing floors, often recover; while persons whose rank exempts them from performing such services languish away their life within the walls.

In the management of insane persons, the value of exercise and employment is to be highly estimated. Female patients may be employed in sewing, knitting, or domestic affairs, and many of the convalescents may assist the attendants. Of all the modes by which the patients may be induced to restrain themselves, regular employment is perhaps the most efficacious; and those kinds of it ought doubtless to be preferred, both on a moral and physical account, which are accompanied by considerable bodily action — that are most agreeable to the patient, and which are most opposite to the illusions of his disease, or the hallucination possessing the mind.

Monsieur Pinel, in his *Treatment on Insanity*, tells us, that at the principal hospitals in Spain, but more particularly the one established at Saragossa, the maniacs capable of working are distributed every morning into separate parties. An overlooker is appointed for each class, who apportions to them all, individually, their respective employments, directs their exertions, and watches over their conduct. The whole day is thus occupied in salutary and refreshing exercises, which are interrupted only by short intervals of rest and relaxation. The fatigues of the day prepare the labourers for sleep and repose during the night. Hence it happens, that those whose condition does not place them above the necessity of submission to toil and labour are almost always cured; whilst the grandee, who would think himself degraded by exercises of this description, is generally incurable: by retaining his privileges, his lunacy is continued.

The advantages of judicious employment as a means of treatment has been ably pointed out by Mr. Gaskell, in his “*Report on the Lancaster Asylum, 1845.*” His plans are now carried out in many public asylums, and have been followed by the best effects.

In the “*Twenty-ninth Annual Report of the Medical Officers of the Dundee Royal Asylum,*” it is stated, “We have said so much before in favour of employment, that we need scarcely add anything about it here. It carries the mind, as it were, away from the contemplation of its own ills, and for a time, at least, secures that happy oblivion of self which seems to be the highest enjoyment of the insane. In this asylum, the employment is generally adapted to the former habits of the patient. Among the male paupers there are many who ply their respective handicrafts almost as industriously as they were accustomed to do at home; while the females of the same class are not less industriously occupied in performing tasks fitted for the various conditions in life.”

In the “*Report (for 1850 of the Medical Superintendent of the Lunatic Asylum for the North and East Ridings of Yorkshire,*” we find the following: — “The proportion of insane persons and idiots who can, when under proper instruction, perform remun-

rative labour is very large, as evidenced by the number usefully engaged here, viz. — 135 of both sexes (out of an average of 157 patients): when allowed to be idle, nine out of ten of such patients are unhappy and miserable. They loiter about, mope against a wall, lounge on a seat, squat on the ground, crouch in a corner, become round-shouldered, contract filthy, disgusting, and destructive habits, and ponder over their real or imaginary evils. The listlessness of some, the discontent and mistrust of others, the offensive habits of the worst class, the restlessness and impatience of the unreconciled, and the turbulence of the quarrelsome and disorderly, produce not only injurious effects upon themselves, but more or less of evil on all who are associated with them.

“Under an industrial system, much of the anxiety experienced in the treatment of the insane is lessened; and the duties of those so engaged rather partake of a pleasurable and entertaining character. Looking at it, then, in a higher point of view than its effects upon the finances of the establishment, it converts an insane institution into a busy house of interesting and varied incidents; imparts to it an air of cheerfulness, and of active every-day life; removes every semblance of restraint; encourages a wish amongst the patients for the accomplishment of work in hand; to a great extent deprives them of the harass of their mental hallucinations; and often engenders contentment and gratitude. Its marked influence on the curable is not less striking and satisfactory than on their more unfortunate companions. . . . In illustration, may be recorded a conversation, in an eight-roomed dormitory, between the patients. They had all, save one, formerly been confined in other asylums. Two of the more recently admitted said, ‘they now hoped to get well, as they had so much to occupy them; and they supposed the reason of the patients being so contented was, because they had such good employment.’ Some of the others spoke their sentiments, and said, ‘’Twas so different from being dull and miserable, and having nothing to do.’”

Insane persons should be made to rise early, to take such exercise as their condition will admit of, and have their food served up to them at stated times. Independently of such regularity contributing to health, it also renders them more manageable. In all cases of madness it will be proper to remove the patient from those objects with which he was formerly acquainted, as these might call up ideas and the various associations; and on this account, a change of situation and removal from his friends will be advisable; for it is a fact well known to those who superintend lunatics, that patients seldom, if ever, recover at home. It not unfrequently happens, indeed, that maniacs who have been brought immediately from their families, and who are said to be in a violent and ferocious state at home, become suddenly calm and tractable when placed in a lunatic asylum. On the other hand, it is equally a fact, that there are many patients whose disorder speedily recurs after having been suffered to return to their families, although they

have for a length of time conducted themselves, under confinement, in a very orderly manner. The restraint, cunning, and dissimulation, which many insane persons are capable of, are well known to those who are much with them; but the ignorant are apt to cry out against excluding them from society, because they probably happen to conduct themselves with propriety before strangers, and in short conversations appear coherent and rational.

To attempt the treatment of a maniac in a furious state at his own house, in the bosom of his family, is by no means desirable, and indeed it is seldom practicable; for a patient confined at home naturally feels a degree of resentment when those whom he has been accustomed to command refuse to obey his orders, or attempt to restrain him.

It has been mentioned in the preceding pages, that insane people, when closely confined, are very subject, in winter, to a mortification of the toes, feet, and nates, and that the helpless and bed-ridden patients are very apt to be attacked with a mortification of the buttocks. In all cases of this nature, we are told by Mr. Crowther*, who was formerly surgeon to Bethlehem Hospital, that the treatment usually adopted (consisting of hot fomentations, lint dipped in stimulating liniments, applied warm, and over the whole a poultice of the grounds of stale beer and oatmeal) invariably failed; whereas, by substituting an embrocation of rectified spirit, lowered with water according to the degree of sensibility of the parts, and afterwards covering them with soft lint spread with the ointment here prescribed†, not a single death arising from a mortified state of the nates afterwards happened.

When madness has taken place in consequence of great debility and weakness, as sometimes happens at the close of typhus mitior, all evacuations whatever ought to be avoided, a nutritive and restorative diet should be allowed, and a regular course of the cinchona bark and other bitters, together with chalybeates, be prescribed.

Puerperal Mania.—The mind is apt to be much affected, both after abortion and delivery; and, in some instances, the woman becomes either melancholic or mad, the latter being more frequent. This mania is in general sudden in its attack, and is often preceded by great palpitation and some other nervous affection. Puerperal mania seldom takes place without a suppression of the lochia, or of the lacteal secretion.

The most common time for it to begin is a few days, or a week or two, before delivery. Now and then it occurs after some months, during nursing, or soon after weaning. It has occasion-

* See his Practical Remarks on Insanity.

† 3. ℞ Unguent. Resinæ.
Emp. Resinæ, āā ʒij.

Bals. Terebinthi. ʒj. M.

† 3. Take Resinous Ointment,
Resin Plaster, of each two
ounces.
Terebinthinate Balsam, one oz.
Mix them.

ally been noticed to have arisen even at the commencement of labour.

From the observations of Mons. Esquirol, Physician in Ordinary to the Salpêtrière Hospital, it appeared to him, 1st, That mental derangement is more frequent among women who are recently confined than those giving suck; 2dly, That the danger diminishes in proportion to the length of time that has elapsed since the accouchement; and, 3dly, That women are much more subject to the complaint after weaning than during the period of lactation.

The approach of the disease is announced by symptoms which excite little apprehension, because they so often occur without any such termination. The pulse is weak without any manifest cause; the nights are restless, and the temper is easily ruffled: soon, however, there is an indescribable hurry and peculiarity of manner; the woman's conduct and language are wild and incoherent, and at length she becomes decidedly maniacal. It will be fortunate if the malady is discovered ere she attempts to do herself or infant some injury.

The disease, although frequently tedious, is oftener removed than any other species of mania.

The restorations to health are usually marked either by a return of the lochial discharge, by the accession of milk in the breasts, by copious leucorrhœa, by a mucous, sanguineous diarrhœa, by a return of the menses, which had been suppressed during pregnancy, or by abscesses, but very rarely by pregnancy.

In the treatment of puerperal mania our attention should be directed to the following circumstances:—1st, To protect the patient, if at home, from injuring herself; and should there be any difficulty in confining her to bed, if necessary, we may have recourse to a belt, or a strait waistcoat, by which she will be restrained. Whenever possible, she ought to be committed to the charge of a nurse accustomed to the task, as she will not be equally safe under the care of any other, however discreet and intelligent. 2dly, To evacuate, by occasional gentle purgatives, any impurities in the alimentary canal which might keep up or aggravate the original disorder. 3dly, To watch the state of the circulation, and if congestion or inflammation in the brain should supervene, to remove it by antiphlogistic remedies; with an exception to venesection, preferring the application of a few leeches to the pudenda and thighs, gentle diaphoretics, and diluent drinks. Probably a warm bath, especially the hip-bath, might prove an auxiliary means of relief. 4thly, To procure rest by night, if required, by administering morphia, or the extractum hyoseyami in sufficient doses. To allay irritation throughout the day, the camphor mixture combined with aether may be given. 5thly, To manage the mind of the patient according to circumstances, soothing it during irritation, encouraging it during depression, and when the violence of the disease has subsided, to facilitate the recovery

of the native feelings and faculties by presenting their natural objects.

In a state of convalescence, the mind and attention are to be occupied by cheerful conversation, music, light reading, and afterwards by a change of scene, and regular exercise daily in a carriage or on foot.

Melancholy madness comes on later among lying-in women than furious delirium. The disease differs nothing in appearance or symptoms from melancholy occurring at other times. It is, however, frequently obstinate, but in common goes off after the child is weaned, and the woman's strength has returned. Sending the patient into the country, if resident in town, will therefore be advisable, and as soon as possible removing the child from being nursed by her.

Insanity has sometimes been pretended, for the purpose of evading justice after the perpetration of murder. The principal means for the detection of such pretenders to madness are, a consideration of their probable motives for counterfeiting this state; a strict examination of their conduct when they suppose themselves to be alone and not overlooked, contrasted with their behaviour when they are conscious of being observed; and the existence of that peculiar fetor in the exhalations which so generally accompanies the true maniacal state.

INCUBUS, OR NIGHT-MARE.

IN this disease there is such a weight and oppression felt as to impress the patient with the idea of some living being having taken its position on the chest, inspiring terror, impeding respiration, and paralysing all the voluntary muscles.

Incubus will sometimes occur in the healthiest person when any indigestible food happens to be in his stomach or the upper portions of the alimentary tube during sleep; but a peculiar habit of body is necessary to render a person liable to it. Those of a contemplative disposition, and of that peculiar temperament which disposes to hypochondriasis and other nervous diseases, are very subject to its attacks. Sedentary employments, confinement within doors, literary studies, anxiety of mind, &c., all predispose to visitations of incubus. Sailors have been observed to be very liable to this disease.* Hypochondriacs and pregnant women are also its victims, but the male sex more frequently than the female. In advanced life it is not often met with, except where corpulency, asthma, or a tendency to lethargy, exists.

The disease always attacks during sleep: if this be profound, the first approach of the fiend is usually in the shape of a disagree-

* See Mr. Waller's Treatise on Incubus.

able dream. The patient imagines himself exposed to some danger, or pursued by an enemy whom he finds it impossible to avoid. He frequently feels as if his limbs were tied, or deprived of motion; at other times he fancies himself confined at the bottom of a cavern or vault, and in danger of suffocation. This is often the whole of the sensation which the disease produces, when it goes off either by an oblivious sleep or dream. Here incubus is not fully formed; the predisposition is only evinced.

When the paroxysm actually takes place, the uneasiness of the patient in his dream rapidly increases, till it ends in a kind of consciousness that he is in bed and asleep; but he feels oppressed with some weight which confines him on his back and prevents his breathing, which is now become extremely laborious, so that the lungs cannot be fully inflated by any effort he can make. The sensation is now the most painful that can be conceived: the person becomes every instant more awake and conscious of his situation; he makes violent efforts to move his limbs, especially his arms, with the view of throwing off the incumbent weight, but not a muscle will obey the impulses of the will; he groans aloud, if he has power to do it, while every effort he makes seems to exhaust the little remaining vigour. The difficulty of breathing goes on increasing, so that every breath he draws seems to be almost the last that he is likely to draw; the heart generally moves with increased velocity, sometimes is affected with palpitations; the countenance appears ghastly, and the eyes half open. The patient, if left to himself, lies in this state generally about a minute or two, when he recovers all at once the power of volition, upon which he either jumps out of bed, or instantly changes his position, so as to awake himself thoroughly. If this be not done, the paroxysm is very apt to recur immediately, as the propensity to sleep is almost irresistible, and if yielded to, another paroxysm of night-mare is, for the most part, inevitable.

Where the disease is established, some confusion of the head, ringing in the ears, and spectra before the eyes, will often remain for a time after being roused. There is often also a sense of weight at the stomach, an unpleasant taste in the mouth, acceleration of pulse, and palpitation of the heart.

When the paroxysm goes off, as frequently happens, without the patient awaking, strange hallucinations are occasionally produced, which give origin to reputed visions and supernatural visitations, even among people of great intellectual cultivation. The degree of consciousness, during a paroxysm of night-mare, is so much greater than ever happens in a dream, that the person who has had a vision of this kind cannot easily bring himself to acknowledge the deceit, unless he awakes out of his paroxysm and finds some incongruity in respect to time or place which proves the transaction to be an illusion.*

* See Mr. Waller's Treatise on Incubus, for various deceptions of this kind.

Spasmodic constriction of the diaphragm and muscles of the chest has been assigned by some as the proximate cause of incubus. The disease is not attended with danger.

The complaint seems to be altogether dependent on a state of dyspepsia, and is usually accompanied with a distension of the stomach and bowels; by flatus, constipation, and acid eructations. Whenever the dyspeptic symptoms are urgent, we may administer one of the draughts prescribed below*, repeating it as the occasion may require. Costiveness is to be guarded against by some gentle aperient, such as a few grains of rhubarb with magnesia. Where there is much languor and debility, with loss of appetite, we may recommend the *pilula ferri composita*, together with either the *decoctum cinchonæ*, *infusum gentian. comp.* vel. *quassia*, or any other agreeable bitter, various formulæ of which may be found under the head of Dyspepsia. The carbonate of soda mixed with ale or porter, will form a pleasant beverage for those who are liable to dyspeptic symptoms and incubus.

Persons subject to incubus ought carefully to shun all kinds of food likely to prove flatulent or of difficult digestion, particularly for supper; they should be guilty of no intemperance whatever, and should avoid gloomy contemplations, a sedentary life, and particularly intense study, with late hours. Moreover, they should always have some person to sleep near them, so as to be immediately awakened by their groans and struggles; for the sooner a person is roused from a paroxysm of the night-mare the better, as, when in a very high degree, it differs little from a fit of epilepsy. Where medicine is not at hand, a glass of any cordial will frequently dispel flatulence, and prevent the paroxysm of incubus.

Acidities in the stomach are productive of the worst species of dreams; and nothing will so effectually prevent and remove such crudities as a little of the carbonate of magnesia mixed in peppermint water, and taken at bed-time.

* R₃ Potassæ Carbon. gr. xij.

Aq. Ment. Pip. f. ʒj.
Tinct. Card. Comp. f. ʒiij.

Syrup. Zingib. f. ʒj.
ft. Haustus.

Vel,
R₃ Ammonia Sesquicarb. gr. x.

Aq. Cinnam. f. ʒx.
Tinct. Capsic. f. ʒj.
Syrup. Croci, f. ʒjss. M.

ft. Haustus.

* Take Carbonate of Potass, twelve grains.

Peppermint Water, one ounce.
Compound Tincture of Cardamoms, three drachms.
Syrup of Ginger, one drachm.

Mix them for a draught.

Or,

Take Sesquicarbonate of Ammonia, ten grains.

Cinnamon Water, ten drachms. ,
Tincture of Capsicum, one dr.
Syrup of Saffron, one drachm
and a half.

Mix them for a draught.

CLASS III.

CACHEXIÆ, or CACHECTIC DISEASES.

A DEPRAVED state of the whole, or greater part of the body, without any primary febrile or nervous affection, constitutes this class.

ORDER I.

MARCORES.

EMACIATION of the whole body is the character of this order.

ATROPHIA, OR ATROPHY.

MARASMUS, or atrophy, is marked by a gradual wasting of the body, attended with fever of a slow, remitting kind, loss of appetite and impaired digestion, depression of spirits, and general languor.

The causes which most commonly give rise to this disease in adults are mental uneasiness, defective nutriment, long-continued intemperance, excessive sensual indulgences, impaired digestion, and among women the fluor albus, and continuing to suckle too long. Those which occasion it among children are, unwholesome air, a poor diet, scanty clothing, severe evacuations, difficult dentition, great confinement within doors, worms in the stomach or intestinal tube, bad digestion, and a scrofulous constitution; but the last is by far the most general of all causes. Sometimes atrophy has supervened on the hooping cough, when it has proved severe and been of long continuance; occasionally it takes place without any evident cause.

Young persons of both sexes who are of a delicate make, and at the same time grow very fast, are apt to be attacked with this complaint before they arrive at the age of puberty. It is particularly prevalent in large and populous cities, where children are deprived of ready access to exercise in pure air, or where they are confined in crowded school-rooms. Children, also, who are employed in manufactories, where their occupation and confinement are such as to weaken and enervate them, are very likely to be attacked with it.

Emaciation of the body, or marasmus, very frequently arises from a morbid state of the mesenteric glands, induced by scrofulous inflammation, to which they appear peculiarly liable. Whatever may be the effect of diseased mesenteric glands upon the chyle, we

are warranted in assigning this as the most frequent cause of bodily emaciation in children, seeing that the two states are almost invariably associated.

Sluggishness, lassitude on the slightest exertion, depravity and loss of appetite, wasting of the muscular flesh, paleness of the countenance, with bloating, swelling, and prominence of the belly, oedema of the lower extremities, an irregular and generally costive state of the bowels, a change in the colour and odour of the fæces, and fetid breath, mark the beginning of the disease. When these symptoms have continued for a little time, they are followed by alternate paleness and flushing of the countenance, heat and dryness of the skin, a constant picking of the lips, face, and fingers, apparently connected with their rough and dry state; a feeble and quick pulse beating from one hundred to one hundred and forty in a minute; thirst, fretfulness, great debility, strong aversion to be moved from the bed, and disturbed sleep; occasionally there is also delirium.

In some cases where the disease goes on unchecked, or is aggravated by improper management, symptoms very closely resembling those of hydrocephalus become apparent. At other times the violence of the disease falls upon the abdominal viscera. There is pain in the bowels, more or less constant, often acute, and causing the child to keep his legs drawn up to the belly. The lips are of a deep red colour, the angles of the mouth beset with small ulcers, or probably the whole lip divided by fissures. In general the bowels are relaxed, the abdomen gradually enlarges and feels full and hard, while the other parts of the body waste away; indeed, the emaciation goes on in this state of the disease very rapidly and extensively, the cheeks fall in and are of a marbly whiteness, unless when flushed with fever. The eyes are glassy and sunk, the nose appears lengthened, and the superficial veins become more than commonly distinct.

With the mesenteric obstruction just described, it is not uncommon to find the thoracic viscera implicated, a cough comes on attended with a difficulty or shortness of breathing, an expectoration of puriform mucus, and ultimately the child becomes consumptive.

Atrophy, arise from whatever cause it may, is usually very difficult to cure, and not unfrequently terminates in dropsy.

Where the disease has been rapid in its progress, it is not uncommon to find extensive ulceration of the mucous membrane of the bowels, with or without disease of the mesenteric glands. Sometimes the only morbid appearance has been an enlargement and ulceration of the mesenteric glands, partaking strongly of a serofulous character. It is not unusual to find the intestines distended with air, and more than commonly empty.

In attempting to effect a cure of atrophy, we should endeavour to find out the cause from which it has originated, and to remove it, if possible. If occasioned by worms, these must be destroyed by

the vermifuge medicines advised under that particular head; if by sensual excesses, or the continuing to suckle too long, these must wholly be discontinued; if from severe evacuations, these must be suppressed; if from an impoverished diet and unwholesome air, these must be quickly changed; if from a serofulous disposition, deobstruents, purges, and tonics, must be had recourse to in due turn (see Serofula); and if from a venereal taint, which is sometimes the case, we must then resort to a use of mercury, with the decoctum sarsæ, and other auxiliaries, as recommended under the head of Syphilis, together with a milk diet.

In all cases of atrophy, the patient should make use of food that is nutritive and easy of digestion, and it should be taken frequently, but in a small quantity at a time. He should likewise breathe a pure, dry, and wholesome air; and be comfortably clothed, taking such moderate exercise every day as his strength will admit, particularly on horseback. A change of air will be likely to prove beneficial.

To assist the digestive powers it will be proper to put him under a course of stomachic bitters, cinchona, and chalybeates. Due evacuations by stool ought to be strictly attended to. Mild laxatives, repeated at certain intervals, will therefore be necessary. They will preserve the bowels in proper action, carry off feces which had begun to be offensive and hurtful, and prevent accumulation. Gentle vomitings with the eupri sulphas, as mentioned under the head of Phthisis Pulmonalis, might possibly, by their stimulus, prove of infinite service. The myrrh mixture, recommended in the cure of the same disease, would be likely to produce a good effect.

In this complaint cold bathing will be proper; but the patient should begin with a tepid bath, reducing it gradually to a cool, and at length to a cold temperature.

When there is a disposition to œdematous swellings of the legs and feet, we should combine diuretics with whatever tonics we administer, as advised in Anasæra.

In children of a serofulous habit, atrophy is often accompanied with an enlargement of the mesenteric glands; and then indigestion, costiveness or purging, irregular appetite, flushed cheeks or a total loss of colour, impaired strength and spirits, remittent fever, and a hard and tumid belly, with emaciated limbs, prevail.

In a general way, the principal indications in such cases are,—to remove the obstruction in the lymphatic system, and effect a resolution of the indurated glands of the mesentery; to carry off the viscid matter; and, lastly, to strengthen the system and establish a good digestion, as well by means of proper diet as by medicines.

Among the first, and as general deobstruents, are mercurial and antimonial remedies, neutral salts, soap, steel, and hemlock, to which, perhaps, may be added with propriety, frictions over the abdomen, and the employment of a tepid salt-water bath. The

hydrargyri ehloridum, is the best mercurial we can employ, and may be joined with some purgative medicine, such as rhubarb: this combination may be continued in small doses daily, or every other day, till there shall be some favourable change in the feel and size of the belly. When we do not like to have recourse to mereury, we may administer rhubarb joined with potassæ tartras as a purgative well caleulated to promote a moderate action of the bowels. Oeeasional gentle emeties may be good auxiliaries.

The emaciated state to which the patient is generally reduced, even although we should be fortunate enough to remove the obstruction, will require the aid of tonic remedies. To strengthen the stomach and alimentary canal, and promote a good digestion,—the only means by which a nutritious ehyle can be obtained, and the body kept in a healthy state,—we should have recourse to tonics, such as infusions* of easearilla, calumba, cinchona, and steel†, adding some aperient if neecessary. To these may be joined daily frietions of the belly, limbs, and spine. Where the obstructions are removed, the cold bath will be a proper remedy.

* 1. R₃ Infus. Gentian. f. ʒijss.

Tinet. Cardam. f. ʒss.

Potassæ Carbonat. ʒss. M.

Capiat cochl. j. infantis bis terve in die.

Vel,

2. R₃ Infus. Cinchonæ, f. ʒijss.

Tinet. Calumb. f. ʒij.

Potassæ Carbonat. ʒj. M.

Cochl. j. bis in die sumendum.

Vel,

3. R₃ Rad. Calumb. Contus. ʒij.

Aq. Bullientis, f. ʒiv.

Post horas tres cola, et adde

Tinet. Cinnam. C. f. ʒss.

Sodæ Carbonat. ʒss. M.

Vel,

† 4. R₃ Ferri Sesquioxidi, gr. ij. — v.

Pulv. Calumb. gr. viij. M.

ft. Pulvis, mane et vespere capiendus.

Vel,

5. R₃ Pulv. Cinchon. gr. x. — ʒss.

* 1. Take Infusion of Gentian, three ounces and a half.

Tincture of Cardamoms, half an ounce.

Carbonate of Potass, half a drachm.

Mix them, and let a child's spoonful be taken twice or thrice a-day.

Or,

2. Take Infusion of Peruvian Bark, two ounces and a half.

Tincture of Calumba, three drachms.

Carbonate of Potass, one scruple.

Of this mixture, a child's spoonful may be taken twice daily.

Or,

3. Take Calumba Root, bruised, three drachms.

Boiling Water, four ounces.

Let them infuse for three hours, strain off the liquor, and add

Compound Tincture of Cinnamon, half an ounce.

Carbonate of Soda, half a drachm.

Mix them. The dose may be the same as of the former.

Or,

† 4. Take Sesquioxide of Iron, two to five grains.

Powder of Calumba, eight grs.

Mix them, and let this powder be taken morning and evening.

Or,

5. Take Powder of Peruvian Bark, ten grains to half a drachm, according to the age.

Where atrophy arises as a consequence of suckling, the curative indications are, — to restore the wasted strength, to relieve the affection of the lungs, and to quiet or remove the fever. The first point then is, for the woman to avoid the exciting cause, and therefore the child must be weaned immediately; she must live on milk, broths, jellies, sago, blane-mange, salep, Indian arrow-root, and tapioca, with eggs, and a moderate quantity of animal food for dinner. Wine in moderation will likewise be proper. To add to the effects of a restorative diet, a course of the cinchona or other bitters, with the diluted sulphuric acid, myrrh, and chalybeates, as advised for dyspepsia, may be entered upon.

If the affection of the lungs appears to be of an inflammatory nature, and marked by hardness of the pulse, oppressed breathing, or a fixed pain in some part of the thorax, bleeding to the amount of three or four ounces may be necessary, which ought to be drawn from as near the painful part as possible by means of leeches; but if none of these symptoms are present, we should be content with applying a succession of blisters about the thorax. Where there is any inflammatory action, the diet must be confined to vegetables and milk, omitting the cinchona and other medicines, and substituting laxatives, and the saline mixture with nitre, combined with small nauseating doses of tartarised antimony.

The fever is to be removed by shortening the paroxysms when they come on; and during the intervals, by preventing their recurrence by the means pointed out under the head of Intermittent and Remittent Fevers.

The atrophía ablactatorum belongs to the order of Mareores, but is inserted among the infantile diseases.

PHTHISIS, OR PULMONARY CONSUMPTION.

THE older writers upon Thoracic Pathology described under the term Pulmonary Consumption a group of general and local symptoms, of which emaciation, debility, dyspnoea, cough, pain in the chest, purulent and sanguineous expectoration, hectic fever, night perspirations, and diarrhoea, formed the principal features. A classification of the several causes capable of producing these symptoms was also attempted, and the genus Phthisis consequently divided into three species.

1. Phthisis Catarrhalis.
2. ——— Apostematosa.
3. ——— Tubercularis.

To which a fourth, Dyspeptic Phthisis, was added by Dr. Wilson

Ferri Sulphat. gr. j. — iij.	Sulphate of Iron, one grain to three.
ft. Pulv. pro dos. bis in die repetendus.	Mix them. This powder may be repeated twice a-day.

Philip, under the supposition of a variety being simply due to a diseased condition of the organs of digestion. The unsatisfactory character of this classification will be at once admitted when we find that the tubercular may run into the apostematous, and the catarrhal into both varieties, according to the peculiarity of the constitution; and that concurrent circumstances, and more especially a common cause, may produce all of them in different idiosyncracies. (Dr. M. Good, *Study of Medicine*.)

Modern pathologists, since the discovery of auscultation and percussion, have considerably limited the scientific meaning of the term consumption, having agreed to restrict its use to a disease which originates from the deposition of tubercular matter within the pulmonary parenchyma, and which gives rise to certain local symptoms capable of being detected by means of the modes of examination above mentioned. As many thoracic diseases present general and functional symptoms very similar to those produced by tubercular deposits, some doubts might be reasonably entertained respecting the propriety of this restricted definition of the word consumption, but the phraseology of medical science has become fixed and unalterable on this point, and in the following account of pulmonary consumption, we consider only that form to which the ancient writers applied the name of phthisis tubercularis. The morbid matter presents itself in the lungs under two forms, — the interstitial and the infiltrated tubercle, — the former being deposited underneath the sides of the lung-cells and bronchial tubes, between the smallest lobules and vesicles, in the shape of roundish, grey, semi-transparent (miliary) little bodies, scattered in countless numbers through the pulmonary substance; the latter exuded in masses between the lung-cells and on the free surface of the passages leading to those minute cavities. The latter is frequently so abundant that the lung looks as if fluid tubercular matter had been poured into it and there hardened. (Dr. Watson.) It is impossible to determine with any accuracy the length of time during which this foreign matter may remain in a crude and unchanged condition in the pulmonary substance. In some instances of acute phthisis death has been found to occur at the early stage just described, and mainly as a consequence of the asphyxiated condition induced by an enormous accumulation of the tubercular matter within the lung. But in the ordinary course of events the tendency of tubercle is either to become indurated and obsolete, or else to undergo a process of softening and fluidization. In the former case, the abnormal deposit becomes hard and almost cartilaginous from an absorption of its more fluid parts, and in some instances converted into a gritty calcareous mass surrounded by shrunk and obliterated lung tissue. In the latter case, softening commences at one or more points of a tubercular mass; ulceration breaks down and destroys the parenchyma, in which the morbid element is situated; an incessant cough and expectoration eliminate the fluid matter resulting from the disorganization of the

lung, and cavities are eventually formed riddling the organ in various directions. The size of these excavations may vary from that of a bean to a man's fist; their form entirely depends upon the directions followed by the softening and ulcerative processes; their interior is more or less filled with purulent and mucous fluid, and their walls are either lined by a species of false membrane, or consist simply of the broken down and rotten pulmonary substance. As tubercle almost invariably attacks the apices and upper parts of the lungs in the onset, the disorganization described will of course be most marked in those positions and the local symptoms most developed.

Tuberculosis of the lung may appear at almost any period of life, but from the tables of the Registrar-General we find its ravages to be chiefly restricted to the young and middle-aged portion of the population, inasmuch as 70 per cent. of the number of deaths due to this disease are found to occur under the age of 45. From the tables quoted below, we observe that nearly one-third of the mortality of England and Wales is the consequence of thoracic affections, — that one-half of these must be ascribed to the disease under consideration. The fearful nature of pulmonary consumption is therefore sufficiently evident in the undoubted fact of one-sixth of the whole mortality of this country being due to its baneful agency.

Thus in the year of the census of 1841,—

The population of England and Wales was	15,912,773
The entire mortality - - -	343,847
The mortality from diseases of the chest -	96,729
The mortality from phthisis pulmonalis -	59,592

And if we examine the return for London (1846) we find—

Male.

	All ages.	Under 5 years of age.
Mortality from all causes - -	24,941	10,434
Mortality from diseases of the chest	7,685	2,139
Mortality from phthisis pulmonalis	3,729	234

Female.

	All ages.	Under 5 years of age.
Mortality from all causes - -	24,148	9,340
Mortality from diseases of the chest	6,683	1,902
Mortality from phthisis pulmonalis	3,161	269

It would appear, therefore, that a greater liability to phthisis exists in the male than in the female sex — a view borne out by the valuable report of the medical officers of the hospital at Brompton. The latter authority further informs us that the liability to consumption is greatest in both sexes from the ages of 25 to 35 years, and that under 25 the liability is greater in females than in males by nearly 10 per cent., while above 35 it is greater in males than in females by about 12 per cent.

The causes which predispose to this disease are very numerous; the following are, however, the most general:—hereditary disposition; particular formation of the body, obvious by a long neck, prominent shoulders, and narrow chest; scrofulous diathesis, indicated by a fine clear skin, fair hair, delicate rosy complexion, large veins, thick upper lip, a weak voice, and great sensibility; certain diseases, such as catarrh, pneumonic inflammation, syphilis, serofula, small-pox, and measles; particular employments exposing artificers to dust, such as needle pointers*, stone-cutters, millers, &c.; or to the fumes of metals or minerals under a confined and unwholesome air†; violent passions, exertions, or affections of the mind, as grief, disappointment, anxiety, or close application to study, without using proper exercise; playing much on wind-instruments; frequent and excessive debaucheries, late watching, and drinking freely of strong liquors; great evacuations, as diarrhoea, diabetes, excessive venery, fluor albus, immoderate discharge of the menstrual flux, and the continuing to suckle too long under a debilitated state; and, lastly, the application of cold, either by too quick a change of apparel, keeping on wet clothes, lying in damp beds, or exposing the body too suddenly to cool air when heated by exercise; in short, by anything that gives a considerable check to the perspiration.

“It has been shown that the increased mortality in the Millbank Penitentiary has been due almost wholly to the diseases which are characterised by the deposition of tubercular matter in different organs of the body, but principally in the lungs; and it has been further shown that in all prisons where convicts have been employed for a long time the same state of things has prevailed; that in Switzerland and America, as well as in the Millbank Penitentiary, tubercular diseases have produced a rate of mortality twice or thrice as high as the same diseases among the free population of cities, while the mortality from no other diseases or class of diseases has, uniformly in all persons, been raised above the ordinary rates among the free population.”—*Med. Ch. Tr.* xxviii.

Although Louis and Phillips have thrown some degree of doubt

* In the fifth volume of *Memoirs of the Medical Society*, we are informed by Dr. Johnson, that persons employed in the pointing of needles, by dry-grinding them, are quickly affected by pulmonary complaints, such as cough, and purulent and bloody expectoration; and that they scarcely ever attain the age of forty years. We are also told by Dr. Willan, in his *Reports*, that hair-dressers, bakers, masons, bricklayers, labourers, laboratory men, coal-heavers, and chimney-sweepers, are very liable to obstinate pulmonary diseases; as are likewise, in an equal degree, the dressers of flax and feathers, and workmen in the warehouses of leather-sellers. Many persons thus engaged struggle with a hard tormenting cough until it terminates in consumption, whereas, by a timely removal into pure air, and having recourse to a suitable regimen, they might soon have been restored to health.

† Mr. Polwhele, in his history of Cornwall, mentions, that the miners there are very subject to consumption, and that more than one-half of their population falls a sacrifice to it; owing, as he supposes, to their working in what are termed damp, in which the air is mephitic, or unfit for respiration.

respecting the hereditary nature of serofula and tubercle, the concurrent testimony of a host of observers undoubtedly maintains the correctness of the original opinion on this point. Of 80 cases described by Dr. Glover, and referred to by Dr. Copland, 42 furnished clear evidence of hereditary transmission. And of 1010 consumptive patients admitted into the hospital at Brompton, nearly one in four was born of a phthisical parent. The daily experience of those whose attention is particularly drawn to phthisis pulmonalis fully corroborates the statement that there is no disease which results from hereditary predisposition so frequently as consumption.

We may trace the subject still further with considerable practical advantage. Thus the Report already referred to shows, that daughters are more liable to inherit phthisis from their parents than sons, in the proportion of two to one, — a result somewhat similar to the hereditary predisposition in insanity; and that while a consumptive father transmits the disease to the sons in 59·4 per cent., and to the daughters in only 43·5 per cent., the mother transmits consumption to the sons in 40·6 per cent., but to the daughters in 56·5 per cent. Statistics of this kind are of the utmost importance; and the results here stated appear to be founded upon a number of cases sufficient to allow the inference of a law. The comparison of the relative hereditary transmission of phthisis and insanity is interesting and practical: — “We find that in males, insanity is an hereditary disease in nearly 12 per cent. of the cases observed, whilst consumption is so in 18 per cent. In females, insanity is hereditary in about $13\frac{1}{2}$ per cent., consumption in 36 per cent. In both sexes taken together, the percentage of insanity is $12\frac{1}{2}$, of consumption $24\frac{1}{2}$. Thus the probability of consumption being transmitted to the offspring by a parent affected with that disease is as two to one when compared with the probability of the transmission of insanity from an insane parent.” — *Report*, p. 20.

Little is known of that peculiar form of hereditary transmission in which the disease passes over one or more generations to appear in a succeeding one. Of the existence of cases of the kind we have no doubt, but to what extent the principle is operative we are incapable of deciding, by reason of the paucity of facts from which a fair inference might be drawn.

In enumerating the causes of phthisis, a late writer mentions*, that moist air is a very frequent one; he supposes it to operate by occasioning general relaxation and debility; and observes, that the frequency of the disease in Holland has been attributed to this cause. It has not, however, been satisfactorily proved that phthisis is really frequent among the Dutch. The reverse, indeed, has been stated; for Dr. Beddoes, in his *Essay on Pulmonary*

* See Dr. Wilson's *Treatise on Febrile Diseases*, vol. iv.

Consumption, quotes Dr. Cogan, a physician who practised many years in Holland, as remarking on the infrequency of coughs and colds in that country in comparison with England; and consumption has been said to be much more rare in the fenny parts of Lincolnshire than in the high lands in the same county.

Various causes have indeed been assigned for the increasing prevalence at the present time of this distressing disease in the United Kingdom; and among others, the disuse of wood fires, and the general adoption of mineral coal for fuel, has of itself been thought sufficient by some persons to account for it. I am induced to think that the use of gas, and particularly that arising from coal, now much used in many dwelling-houses, as well as at most places of public resort, such as the theatres, &c. renders the air injurious to health; and, however slow the process may prove in persons of a strong constitution, the hydrogenous properties of such gas as supplies the lamps must produce injury to the lungs, and probably affect other parts of the human frame in time.

The great and sudden changes of temperature or variableness to which our climate is subject, ought, however, to be considered as the real cause of the frequency and prevalence of pulmonary consumption; and there is great reason to suspect that the warmth and closeness of our apartments, together with the present scanty, light, and flimsy attire of our modish females, very much increase the liability to this complaint. In an economical point of view, as saving an expenditure of fuel, the ingenious contrivance of Count Rumford and others undoubtedly is very efficacious for the purpose; but in the winter, when we leave such apartments to go into the open air, the sudden change of temperature which we experience often amounts to 25 or 30 degrees; the entrance to the lungs and glottis consequently falls into torpor, from the stream of cold air which is constantly passing between them for the purpose of respiration; and when we re-enter our apartments, the blood rushes with violence into these vessels, previously rendered torpid by the cold; and like the pain our hands experience on coming near a fire after being exposed to cold, we feel a sensation of heat about the glands of the throat; this local inflammation spreads, and we experience all the usual symptoms attendant on a recent catarrh.

In noticing the causes of the vast prevalence of phthisis pulmonalis, I think I may put down the increase of scrofula among us; and we therefore meet with more cases of tubercular consumption than of any other kind. The predisposition to scrofula is inherited by children from their parents, and at some period or other of their life the disease shows itself either in inflammation of some gland that suppurates and breaks externally, or in tubercles in the lungs that proceed to suppuration and ulceration, and terminate in consumption.

All over the Levant, not only the natives, but also the physicians, entertain an opinion that phthisis is a disease of a contagious nature; and in the Venetian states there is a law, I understand,

which directs the clothes and even furniture of those who have died of consumption to be burnt. Under the same idea, it is customary among the Sicilians to desert the consumptive patient; and when he dies, they burn his bed and bed-clothes, and well ventilate and fumigate the apartments in which he lay. It does not seem probable, however, that phthisis pulmonalis is infectious, at least it is not regarded so among us at present, although Morgagni, Van Swieten, and of a still later date, Morton*, were of that opinion; but it often occurs in a family from an exposure to the same occasional causes, or from a similarity of constitution and hereditary predisposition. The only way in which I conceive the disease can be conveyed from one person to another, if at all possible, is by sleeping constantly in the same bed with one who labours under it in its ulcerative stage, accompanied with fetid expectoration and cadaverous-smelling night-sweats, and so inhaling his breath. Two or three seemingly well-marked cases of this nature have fallen under my own observation. Respecting the question of contagion in this disease, the late Dr. Heberden observes †, that he has not seen proof enough to say that the breath of a consumptive person is infectious, and yet he has seen too much appearance of it to be sure that it is not; for he has observed several die of consumptions in whom infection seemed to be the most probable origin of their illness, from their having been the constant companions, or bedfellows, of consumptive persons. Viewing the subject in this light, it would therefore be advisable to avoid being too closely innated with patients in the last stage of pulmonary consumption.

The symptoms of incipient phthisis will vary with the cause of the disease; when it arises in consequence of any severe exposure to cold, producing previous pulmonie inflammation, as in pleurisy, pneumonia, and catarrh, its first stage will be attended with the symptoms pointed out towards the decline of the disease which has given rise to it, and noticed in the preceding part of this work; but when it arises in persons of a strumous temperament, or from tubercles, and there exists a cachectic state, it is mostly thus marked: it begins with a short, dry cough, that at length becomes habitual, but from which nothing is spit up for some time, except a frothy mucus that seems to proceed from the fauces. The breathing is at the same time somewhat impeded, and upon the least bodily motion is much hurried; a sense of straitness, with oppression at the chest, is experienced; the body becomes gradually leaner, and great languor, with indolence, dejection of spirits, and loss of appetite, prevail.

In this state the patient frequently continues a considerable length of time, during which he is, however, more readily affected than usual by slight colds; and upon one or other of these occa-

* See Phthisiolog. lib. ii. cap. 1.

† See his Commentaries on the History and Cure of Diseases.

sions the cough becomes more troublesome and severe, particularly by night, and is at length attended with an expectoration, which towards morning is more free and copious. By degrees, the matter which is expectorated becomes more viscid and opaque, and now assumes a greenish colour and purulent appearance, being on many occasions streaked with blood. In some cases a more severe degree of hæmoptysis attends, and the patient spits up a considerable quantity of florid, frothy blood.

The breathing at length becomes more difficult, and the emaciation and weakness go on increasing. With these the person begins to be sensible of a pain in some part of the thorax, which, however, is usually felt at first under the sternum, particularly on coughing.

At a more advanced period of the disease a pain is sometimes perceived on one side, and at times prevails in so high a degree as to prevent the person from lying easily on that side; but it more frequently happens, that it is felt only upon making a full inspiration, or coughing. Even where no pain is felt, it often happens that those who labour under phthisis cannot lie easily on one or other of their sides without a fit of coughing being excited, or the difficulty of breathing being much increased.

At the commencement of the disease the pulse is often natural, or perhaps is soft, small, and a little quicker than usual; but when the symptoms which have been enumerated have continued for any length of time, it then becomes full, hard, and frequent. At the same time the face flushes, particularly after eating; the palms of the hands and soles of the feet are affected with burning heat; the respiration is difficult and laborious, evening exacerbations become obvious, and by degrees the fever assumes the hectic form.

This species of fever is evidently of the remittent kind, and has in many cases exacerbations twice every day. The first occurs usually about noon, and a slight remission ensues about five in the afternoon. This last is, however, soon succeeded by another exacerbation, which increases gradually until after midnight; but about two o'clock in the morning a remission takes place, becoming more apparent as the morning advances, and in the advanced stage of the disease terminating in a profuse sweat, which, however, is usually partial. During the exacerbations the patient is very sensible to any coldness of the air, and often complains of a sense of cold, when his skin is at the same time preternaturally warm. Of these exacerbations, that of the evening is by far the most considerable.

From the first appearance of the hectic symptoms the urine is high-coloured, and deposits a copious, brandy-red sediment. The appetite, however, is not greatly impaired, the tongue appears clean, the mouth is usually moist, and the thirst is inconsiderable. As the disease advances, the fauces put on rather an inflamed appearance, and towards the termination are often beset with

aphthæ, and the red vessels of the tunica adnata become of a pearly white. During the exacerbations, a florid, circumscribed redness appears on each cheek; but at other times the face is pale, and the countenance somewhat dejected.

At the commencement of hectic fever the bowels are usually costive; but in the more advanced stages of it a diarrhœa often comes on, and this continues to recur frequently during the remainder of the disease; colliquative sweats likewise break out, and these complaints alternate with each other, and induce vast debility. The degree of heat in which the patient is kept has often a great effect on the diarrhœa; for by exposing him to cool air in the morning, the sweat may be much diminished, but the diarrhœa will be increased; and on the other hand, if the diarrhœa be relieved by opiates and astringents, the sweating will be aggravated: thus they frequently alternate for a long time, but in a few instances they are both severe at once.

In the last stage of phthisis, the emaciation is so great, that the patient has the appearance of a walking skeleton; his countenance is altered, his cheek-bones are prominent, his eyes look hollow and languid, his hair falls off, his nails are of a livid colour, and much incurvated, and his feet and ankles are affected with œdematous swellings. To the end of the disease the senses remain entire, and the mind is confident and full of hope. It is indeed a happy circumstance attendant on phthisis, that those who labour under it are seldom apprehensive or aware of any danger; and it is no uncommon occurrence to meet with persons labouring under its most advanced stage, flattering themselves with a speedy recovery, and forming distant projects under that vain hope.

Shortly before death, the extremities become cold. In some cases a delirium precedes that event, and continues until life is extinguished.

The cause of hectic fever is generally supposed to be the absorption of vitiated purulency; but possibly it may proceed from other causes. It appears, however, that hectic fever generally attends on extensive suppurations, and it is of little consequence whether it be occasioned by the absorption of pus, or by the inflammation which precedes the suppuration.

Previous to the discovery of auscultation considerable attention was directed by clinical observers to the appearance of the sputa of individuals labouring under diseases of the respiratory organs, and distinctions were carefully laid down in the treatises of the time between purulent and puriform or mucous expectorations. According to these authorities, the presence of actual pus in the matter expectorated was held to be decisive of the existence of confirmed phthisis, while mucous or simple puriform expectoration was not necessarily indicative of a process of disorganization proceeding in the tissue of the lung.

The results of microscopic investigations have proved such views to be fallacious. Thus the sputa, in cases of pneumonia redux

and bronchorrhœa, are frequently found to contain a quantity of true pus-corpuscles at a time when the proper substance of the lung is uninjured. Pus may be, therefore, undoubtedly formed, independently of any structural or organic lesion, and its presence in the expectorated matter cannot be considered pathognomonic of pulmonary ulceration. Modern science has tended to increase the difficulties of distinguishing between pus and mucus, for we are told that no microscopic differences exist between the two fluids; that the globules of true mucus resemble in all essential particulars those of pus, having the same form, the same constitution, and comporting themselves in a manner almost identical with chemical reagents. But if no distinction can be made microscopically between the two fluids, it is as well to inform the student that their physical appearances are dissimilar when viewed *en masse*. For according to Dr. Hassall, "Mucus is a thick, tenacious, and transparent substance, easily admitting of being drawn out into threads, not readily miscible with water in which it floats, not so much from its less specific gravity as from the circumstance of its great tenacity, allowing it to retain in its substance numerous globules of air which render it specifically lighter than the water; it exhibits sometimes an acid and sometimes an alkaline reaction, according to the nature of the surface whence it proceeds; and it contains imbedded in its substance solid particles of two forms, globules and scales; the former are present in alkaline mucus, the latter in that which manifests an acid reaction.

"Pus, on the contrary, is a thick, opaque, and somewhat oily substance, which does not admit of being drawn out in threads, is readily miscible with water in which it sinks; its chemical reaction varies, being sometimes alkaline, sometimes acid; the solid particles which it contains are mostly of one kind,—globules; these are always very abundant, and float freely in the fluid portion of the pus, which in that of mucus they are unable to do so, on account of its tenacity."* Several methods, physical and chemical, were employed to distinguish the two fluids. Thus, the production of a ring of prismatic colours in a portion of expectorated matter compressed between two pieces of glass was held to be indicative of pus. But as these colours simply depend upon the presence of refracting globules, such as those found in pus as well as mucus, the inutility of this means of diagnosis is self-evident. The action of chemical reagents is equally unsatisfactory, for the able authority from whom we have already quoted, informs us that in one respect only can a difference in the effects of reagents be observed—the mucus being less readily acted upon by acids than the pus-globule—a difference evidently not of kind but of degree. We cannot close this account of the sputa without mentioning the fact that a valuable indication of the existence of pulmonary ulceration is occasionally revealed to us by the microscope, in the detection of

* Dr. Hassall. Microscopic Anatomy of the Human Body.

portions of the tough, fibrous lung tissue in the matter expectorated. The yellow, elastic element which surrounds and maintains the true cellular character of the lung is frequently cast up in the act of coughing, and when examined under the microscope exhibits an indubitable evidence of the disorganization to which the pulmonary tissue is being subjected.

The expectoration of matter, more or less tinged with blood, is a symptom of more grave importance than the varieties of sputa already mentioned. Many causes, such as obstructive diseases of the heart, chronic catarrh, emphysema, organic changes of any kind productive of impeded pulmonary circulation, may lead to hæmoptysis; but the sanguineous expectoration of consumption is peculiar and diagnostic in occurring in the earliest stage of the affection before any marked amount of dyspnœa has become developed. In confirmation of this statement we are supported by the statistics of the Brompton Hospital, from which we find that nearly 75 per cent. of the cases of hæmoptysis occurred before the process of softening had commenced. Dr. Walshe considers the most common period for the appearance of this symptom to be at the very outset or after the expiration of the first month, that it occurs in at least 80 per cent. of the cases of phthisis, and rather more frequently in males than in females. He adds also, that although streaked or tinged sputa are of very common occurrence among the earliest symptoms, hæmoptysis is more frequently met with in the stage of softening and excavation, — the latter periods of the disease. Our own experience is at variance with this opinion, but is in accordance with the statistics given in the Brompton Report. "The blood vessels of the lungs are in this (the crude) stage exposed to the irritating influence of the deposited matter; they are then, too, subjected to partial compression and congestion. And there can be little difficulty in supposing that blood itself or its colouring matter will, under these circumstances, escape from them alone or along with the matter then being deposited; whilst at a later period of the disease, these vessels become obliterated or obstructed by the tubercular deposit, or in consequence of the inflammatory action by which the various lesions have been circumscribed or bounded. Indeed, it seems not improbable that many examples of hæmoptysis in the more advanced stages of the disease are the results of fresh tubercular deposition and its effects, than of the lesions of vessels connected with cavities." — *Report*, p. 31.

Passing from the consideration of the general and functional signs, we have now to describe the local symptoms of the disease as revealed by auscultation and percussion.

We have seen that tubercular matter is originally deposited in a crude state in the pulmonary parenchyma; that its natural tendency is to become softened and liquefied, and to be thereby placed in a favourable condition for elimination by means of the expectoration; that the attempt at cure is accompanied by an ulcerative destruction of the tissue of the lung, by which cavities are formed,

and that total local recovery may be occasionally effected by the collapse and union of the walls of a cavity and the formation of an eschar or cicatrix upon the outer surface of the lung. Such cicatrices or puckerings are not of very rare occurrence at the apices of the lungs, and prove the curability, to a certain extent, of tubercular disease; but results so favourable are unfortunately only exceptional. Tubercle once formed continues to be poured into the substance of the lung from the apex downwards; mass after mass blocks up the proper tissue of the organs; disorganization proceeds to a frightful extent, until excavations traverse the lung in various directions, and death is the result of exhaustion and asphyxia, or from some of the accidents (perforation of the pleura, abundant hæmoptysis, &c.), which hasten the melancholy conclusion.

Each stage of the process described may be usually traced, step by step, by the local signs resulting, which are divisible into three orders corresponding to the conditions of crudity, softening, and pulmonary excavation. We shall briefly describe the peculiar signs of each stage obtained from auscultation and percussion.

First Stage—Crudity. The facility of diagnosing the presence of tubercular matter at this period of its existence will depend upon the mode in which it is deposited in the lung, — in the miliary or conglomerated form. The former variety, — acute, miliary tuberculization, — in which the entire lung is studded with innumerable semi-transparent grey granulations, presents simply the signs of bronchitis of a most acute character, the quantity of healthy pulmonary tissue, in which the morbid matter is imbedded, being sufficient to preserve the usual resonance on percussion, while the râles — the sonorous, sibilous or mucous varieties, are the ordinary expressions of an inflammatory condition of the lining membrane of the bronchial ramifications. The general appearances of the disease are those of typhoid fever, to which acute phthisis presents many traits of resemblance, — viz. prostration of strength, fever, bronchitis, dyspnoea, delirium, dusky colour of skin, and the condition of tongue well known to be peculiar to that affection. Although miliary tubercle may occasionally limit itself to the apices, and produce in these regions the symptoms of an obstinate and permanent bronchitis, it is usually found disseminated over the entire lung, and giving rise to symptoms of no absolute diagnostic value.

As the accumulation of tubercle in masses, or chronic phthisis, commences particularly in the upper part of the chest, a diminution of resonance in one or both of the subclavicular regions becomes an early symptom of this organic change in the structure of the lung. It must, however, be added, that the lateral regions of the chest occasionally present an increased clearness of resonance on percussion, — a condition mainly referrible to an increased action in the surrounding healthy pulmonary vesicles, eventually leading to an emphysematous dilatation of their cavities. Palpation,

or laying the hand upon the thoracic parietes, enables us to detect an unusual vibration—vocal fremitus—over the diseased portions whenever the patient is made to speak,—a sensation detected with greater facility by auscultation. The earliest symptom of commencing consolidation to be derived from listening to the chest, is a marked prolongation of the period of the expiratory murmur, which, in place of being only one-third the length of the inspiratory, becomes frequently equal to, and even considerably more prolonged in duration than the latter. This phenomenon is the result of an impaired condition of the pulmonary elasticity, by which the lung is rendered less capable of contracting upon and of expelling the contained air with its usual rapidity and force.

The respiratory murmur in the same parts loses its soft vesicular character, in consequence of the lung cells being blocked up by solid matter, and, with the increase of consolidation, presents the same harsh blowing character of sound which is always audible in the trachea and primary divisions of the bronchi. To these symptoms of consolidated lung must be also added the several sibilous, sonorous, and mucous râles proceeding from the local bronchitis, invariably attendant upon the deposition of tubercular matter.

Second Stage—Softening. The stage of softening does not differ considerably in its symptoms from those already described, as characteristic of the stage of consolidation, the dulness in percussion, vocal fremitus, bronchial voice, and respiration, and bronchitic râles, being equally marked in the one stage as in the other. But as the tubercle and lung tissue commence to soften and break down into fluid matter of greater or less consistence, crepitation, subcrepitant and mucous râles become more abundant with the gradual ulceration and elimination of the pulmonary parenchyma.

Third Stage—Excavation. In the stage of excavation the normal character of the pulmonary sounds becomes entirely abolished, at least in those portions of the chest corresponding to the cavities. The vesicular murmur is replaced by a hollow blowing murmur, the fulness and clearness of which depend upon a variety of conditions,—viz. the size of the cavity, the quantity of secretion contained within its interior, the number of bronchial tubes communicating with it, and the freedom of these channels from tough, tenacious, mucous, or purulent matter. The nature of the walls of the abnormal cavity, their capability of reflecting sound, and the healthy or consolidated state of the pulmonary substance between the hollow space and the thoracic parietes, evidently affect the character of the cavernous respiration. The presence of a quantity of fluid in the cavity, gives rise also to every variety of crepitation, from the small crackles to the gurgling or cavernous râles, all of which resound more or less on the cavity, according to the size of the space and its capability of reflecting sounds. The elastic or non-elastic condition of the walls of the cavity impress a peculiar character upon the sounds, — “Thus, cavities formed by thin and

elastic walls, contract easily during the act of expiration, and by expelling a portion of their contained air become capable of admitting an additional quantity of that medium at the succeeding respiration, thereby giving rise to a full developed gurgling sound. On the other hand, cavities which are bounded by tough, tenacious, and non-elastic walls, can only expel their contents with difficulty, and are consequently incapable of producing a gurgling of such an intensity as in the former case. Hence we infer that the size of a cavity cannot be always accurately known from the character and amount of gurgling heard in its interior, for a small active cavity may produce more noise and splashing than a much larger excavation containing a quantity of fluid matter.”*

The resonance of the voice is excessively marked in most cases of pulmonary excavation; its fulness and clearness being however modified by the conditions already described as affecting the cavernous respiration. In many cases the slightest whisper is heard through the stethoscope with a distinctness more evident even than the voice proceeding from the mouth. Around the excavated portions the auscultator will detect the signs already described as characteristic of consolidation and softening of the pulmonary tissue. Lastly, percussion gives results, dependent of course upon the volume of the cavity and its freedom from secretion, and also upon the nature of the lung surrounding the abnormal space. When the walls are thin, elastic, and compressible by external percussion, a peculiar hissing sound is frequently produced, termed the *bruit de pot fêlé*, which is due to the sudden expulsion of a quantity of secretion from the cavity into one or more of the communicating bronchial tubes. In concluding the description of phthisis pulmonalis we may glance for a moment at the duration of the disease, so far as the subject has been studied by modern observers. And for this purpose we have again to refer to the valuable Report of the Hospital at Brompton:—“It appears from an examination of 200 cases, that phthisis rarely proves fatal in less than three months, only one case being recorded as having been fatal within that period.

“The disease existed in 22 cases from 3 to 6 months.

“	“	36	“	“	6	“	9	“
“	“	30	“	“	9	“	12	“
“	“	34	“	“	12	“	18	“
“	“	22	“	“	18	“	24	“
“	“	23	“	“	24	“	30	“
“	“	6	“	“	30	“	36	“
“	“	9	“	“	36	“	42	“
“	“	4	“	“	42	“	48	“
“	“	14	“	“	doubtful.			
		200.						

* Lectures on the Physical Diagnosis of the Diseases of the Lungs and Heart, by Herbert Davies, M.D., p. 134.

In reference to sex, we have observed a remarkable fact, that the disease is more rapidly fatal among males than females, but after a period of eighteen months the reverse is the truth.

In the early periods of medical science, when several morbid conditions were grouped under one common appellation, — phthisis pulmonalis, — it might naturally be expected that much obscurity would arise respecting the proper treatment of the affection called consumption.

The improved science of diagnosis has enabled us to discriminate the several diseases which, previously to the discovery of auscultation, had been confusedly collected under one head. Hence at the present day we hear no longer of general bleedings in true consumption, nor of the adoption of those strong antiphlogistic measures formerly advocated at a time when the means of accurately distinguishing the disease was perfectly unknown.

It is true that the morbid deposition usually gives rise to local inflammation in the form of bronchitis, pleuritis, or serofulous pneumonia, but such results cannot be treated in the heroic manner adopted by the older observers, where means of thoracic investigation were of so limited a character. Our aim is first to support the system during the softening and elimination of a deposit of the tubercular matter, taking care at the same time to mitigate the irritating results induced by the presence of the matter in the pulmonary tissue, and secondly, to prevent the formation of further crops of the tubercular matter. Leeches, or cupping in the sub-clavicular region, is occasionally useful when the dyspnœa is excessive, and the patient possesses a certain degree of power; but an excessive loss of blood in place of alleviating the symptoms will indubitably lead to the formation of a secondary crop of tubercle. At one time digitalis was considered a most valuable specific in consumption. Thus Dr. Beddoes, in his "Essay on Consumption," says, "I daily see many patients in pulmonary consumption advancing towards recovery with so firm a pace, that I hope consumption will henceforward as regularly be cured by the foxglove as ague by the Peruvian bark. Could we obtain a single auxiliary for foxglove, such as we have in many instances for the bark, I should expect that not one case in five would terminate as ninety-nine in a hundred have hitherto done. But I believe a majority of cases will yield to simple foxglove. It is evident that no new cases need be suffered to advance beyond the first stage, without the application of this medicine, and few into it."

Dr. Drake speaks of it thus*: — "It has for several years been given in pulmonary hæmorrhage with effect, and certainly will continue to be, with the intelligent, whatever may be the result of its trial, in phthisis. I am happy, however, to say, that the success which has hitherto attended the exhibition of digitalis in phthisis has been very considerable; several patients, in its confirmed state,

* See Medical and Physical Journal, vol. ii. p. 418.

have been cured by this remedy; almost all have been relieved; life has even been protracted by it; and when death has taken place whilst the system was under its influence, it has been free from pain or struggle; my expectations have been answered; and Dr. Fowler, I understand, from further trials, is fixed in his former favourable opinion."

Dr. Mossman says *, "I have prescribed the digitalis very extensively for upwards of twelve months, and during the last six of that period I have had very ample experience of its powers. I am now fully persuaded, that by a judicious management of the plant, variously combined, I can obviate pneumonic inflammation with as much certainty as I can arrest the progress of an intermittent fever by means of the bark of cinchona." Again, "I am persuaded, that if pulmonary consumption be divided into four stages, the digitalis will very certainly cure the first three, and as certainly alleviate the distressing symptoms of the last."

In the primary stages of the complaint, Dr. Mossman is of opinion that this remedy approximates to a specific. He thinks that it possesses in itself† a power directly sedative; and that the application of this power, by lessening the irritability of the muscular fibre, will explain its salutary operation in the cure of pulmonary consumption.

In the early stage, when the powers of the system are not broken down, I believe it may be productive of very essential service, by moderating the pulse, and by diminishing the hectic fever — the most distressing of all the symptoms, and that which seems to hurry on the patient to a fatal termination. After the purulent stage is completely formed, it has appeared to me, however, not to produce any considerable or permanent good effect; but even in this stage of phthisis it has been thought by some physicians to alleviate the sufferings of the patient.

In administering foxglove it will be necessary to attend to the state of the pulse under different positions of the body; for it appears, by the report of some physicians, that there is a considerable difference of its velocity in the erect and recumbent postures. A case is recorded in the third volume of the "Edinburgh Medical Journal," page 271., in which, after taking this medicine, the pulse was not lessened in frequency when the patient stood erect, being upwards of a hundred. When he sat down, it fell considerably; and when lying on his back, it fell much more; when sitting, it was reduced to seventy-five; and when lying, to forty. The experiment was repeated many times, and always with the same effect.

Hydro-cyanic (Prussic) acid has also been given in phthisis. The medicine was first introduced into practice by the Italians,

* See his Essay on Glandular Consumption.

† Ibid. vol. iv. p. 309.

under the form of distilled laurel-water, and has been given by them and the physicians of other nations in various affections known to depend on inflammatory excitement of some organ, as well as on some species of more evident chronic inflammation. It has been considered by Dr. Granville*, to be a valuable and powerful remedy in checking the progress of pulmonary consumption, when in its incipient state. We are told by him that it is eminently sedative, that it appears to exert its influence on the nervous system, that it gradually diminishes all irritability, checks too rapid circulation, and calms many of the symptoms of fever. If a dry cough be present, it is said to promote expectoration in the first instance, and subsequently to stop the cough itself. In hectic fevers, he tells us, it affords ease, lowers the pulse, diminishes the force and number of the paroxysms, works a favourable change in the action of the lungs and their circulation, while the morbid heat of the skin and the circular flush of the cheeks gradually disappear. The night-sweats are also said to be soon suspended.

In consequence of the powers attributed to it by Dr. Granville, I was induced to make trial of it in several cases, but with no other advantage than that of reducing the pulse very considerably indeed. It has been recommended to begin with the dose of two drops, repeating this about four times a-day, and so gradually increasing it to three or four, and may be administered agreeably to the formulæ annexed.† The symptoms which attend an over-dose of this acid, and the proper remedies to counteract it, are noticed under the head of Animal Poisons.

The lichen islandicus is a favourite remedy with continental physicians, and is daily employed by them in the routine of phthisical cases. The most usual form of exhibiting it is in that of a decoction with milk; or, when this disagrees with the stomach, in water. It is not used, however, indiscriminately in every species of phthisis, nor in every stage of that disorder. It is chiefly recommended in those instances where the cough is attended with purulent expectoration; in cases preceded by, or accompanied with hæmoptysis; in incipient phthisis, where, from relaxation, there is an increased discharge of mucus from the bronchia; in the

* See his Observations on the Internal Use of Prussic Acid in Pulmonary and some other Diseases.

† 1. R₃ Misturæ Amygdal. ʒix.
Acid. Hydrocyanic. diluti, mij.
Syrup. Tolutan. ʒj. M.
ft. Haustus.

Vel,

2. R₃ Aq. Distillatæ aut Infus. Rosæ, ʒx.
Acid. Hydrocyanic. diluti, mij.
Syrup. Papav. ʒj. M.

† 1. Take Almond Mixture, nine drachms.
Prussic Acid, two drops.
Syrup of Tolu, one drachm.
Mix them for a draught.

Or,

2. Take Distilled Water, or infusion of
Roses, ten drachms.
Prussic Acid, two drops.
Syrup of Poppies, one drachm.

Mix them.

sequelæ of measles attended with a quick small pulse, pain of the breast, emaciation, violent cough, and purulent expectoration. Formerly, the *lichen islandicus* was a fashionable remedy among our own physicians, and I have myself prescribed it in several cases of phthisis, but without any evident beneficial effect. It seems, indeed, better calculated for an article of diet than medicine.

Such are some of the means which should be had recourse to during the first or acute stage of phthisis. In the chronic, or confirmed stage, we are to counteract, if possible, the effects of the absorbed matter; to mitigate the most distressing symptoms, such as the cough, diarrhœa, and colliquative sweats; and, lastly, to put the body into as good general health as possible, by air, moderate exercise, and a proper course of mild nutritive food.

A vast number of other remedies have been employed from time to time in the treatment of phthisis. "Antiscorbutic and aromatic plants, balsams of Tolu and Peru, turpentine and camphor dissolved in volatile oils, artificial atmospheres formed of the vapours of emollient, narcotic and balsamic plants; also of certain substances burnt upon heated iron, as myrrh, benzoin, petroleum, tar, resin, and wax, sublimatives of zinc and sulphur. Various gases have been employed; oxygen was recommended by Caillé; hydrogen by Beddoes; even sulphuretted hydrogen by Körtin; carbonic acid also by Beddoes; the vapours arising from stagnant pools; from stables; the smoke of snuffed candles, heated air. The vapours of iodine and chlorine have been also recommended."* Many other proposed remedies might be mentioned, but I shall confine myself to a few words respecting cod liver oil, inasmuch as its valuable nature in the disease can no longer admit of doubt. "This remedy possesses the property of controlling the symptoms of pulmonary consumption, if not of arresting the disease to a greater extent than any other agent hitherto tried." — *Brompton Report* — an opinion in which we most fully and entirely concur. This oil (*oleum jecoris aselli*, or *oleum morrhue*) is obtained from several species of the cod or gadus tribe, and is usually found commercially in two kinds — the one yellow and transparent, used medicinally, the other brown and opaque, and employed in the preparation of leather. Like other fixed oils it consists chiefly of oleic and margaric acid in combination with glycerine, together with a small proportion of resinous matter, phosphoric acid, iodine and bromine.

The iodine exists only in the proportion of one and a half grains in 1000 grains of the oil, and cannot consequently be considered as the active portion of the remedy. At Bergen, in Norway, the livers are usually placed in casks and allowed to putrefy, by which means the oil is separated; the light variety percolating by itself from the liver, but the dark brown being obtained by boiling the residuum when no more of the former will flow out.

* Dr. Thomas Davies. Lectures, p. 291.

Many other modes are adopted for obtaining the oil, hence the numerous shades of colour and taste found in the different specimens met with in commerce. Although a sufficient mass of evidence has been collected, incontestably proving the importance of the remedy, we have yet no satisfactory theory of the mode in which its beneficial effects are produced, and it would be occupying the reader's time to little purpose to enter into the various hypotheses which have been offered of the *modus operandi* of cod liver oil. The following analysis of 542 cases placed under its use at the Brompton Hospital affords a fair indication of its value as a medicine. Of 293 (190 males + 103 females) cases in the first stage —

72	per cent of the	males	}	were materially improved.
62	„	females		
18	„	males	}	the disease was arrested.
28	„	females		
10	„	males	}	the disease was unchecked.
10	„	females		

Of 249 (193 males + 110 females) cases in the second stage —

53	per cent of the	males	}	were materially improved.
61	„	females		
14	„	males	}	the disease was arrested.
14	„	females		
32	„	males	}	the disease was unchecked.
25½	„	females		

“Viewing these facts collectively, we find in about 63 per cent. the symptoms improved; in 18 per cent. the disease arrested; and in 19 per cent. it went unchecked.” Compared with the results of other modes of treatment it will be at once admitted that cod liver oil has been productive of more good in the treatment of phthisis than any other agent employed. A remarkable fact connected with its use is the rapidity with which patients increase in weight under small doses (drachm) of the remedy; thus, forty-one pounds have been gained in sixteen weeks, nineteen and a half pounds in twenty-eight days, and ten pounds in ten days. Almost every practitioner must have observed this peculiar increase in weight out of all proportion to the quantity of the remedy taken,—a fact evidently proving that the oil cannot be considered to act simply as nutritious matter. “Taking both stages of the disease and the sexes collectively, a gain of weight occurred in 70 per cent., a loss of weight in only 21 per cent., and in about 8½ per cent. the weight remained stationary.” — *Report*.

The slight sketch we have thus traced of the results of the cod liver oil treatment is fully sufficient, we believe, to convince the most sceptical of its value. From extensive personal observation we believe that benefit is most surely obtained from it when

employed in small doses, such as one or two drachms three times daily; that its evident effects are, an improvement of the appetite, alleviation of the cough and expectoration, diminution of night-sweats, and in many cases gradual disappearance of the local signs, or at least a suspension of the disease for the time being; and that larger doses than the above usually disturb the stomach, cannot be continued for any period, and defeat the object in view. Some difference of opinion exists respecting the propriety of administering the oil in cases of hæmorrhagic tendency. We have found much benefit from its use in these cases, omitting its administration only at the periods of hæmoptysis; and we also believe that the oil is not contra-indicated in the ulcerative diarrhœa, so frequently the attendant of phthisis pulmonalis.

The oil may be given in milk, weak coffee, ginger wine, or bitter infusion; and in cases of diarrhœa, upon a chalk mixture, with or without the addition of some preparation of opium. Mixtures may also be made with liq. potassæ or compound tragacanth powder.* The palliative treatment of the individual symptoms which arise in the course of the disease may be dismissed in a few words. The cough is to be soothed by demulcents and emulsions, and especially by tinctures which contain small quantities of opium. The nocturnal perspirations are to be combated by the mineral acids, gallic acid, and by sponging the chest with vinegar and water, or some astringent solution. Occasional hæmoptysis, by gallic acid and the preparations of lead combined with opium. Diarrhœa, according to its cause; but when dependent upon ulceration, by opium, sulphate of copper, logwood, a chalk mixture, &c. Dr. Theophilus Thomas has found much benefit in the latter cases from the administration of the nitrate of bismuth.†

It will be necessary to pay a proper attention to regimen. The diet should consist of such things as are nutritive, easy of digestion, and calculated to give strength to the system, without creating a disposition to febrile excitement, — as preparations of the different farinacea with milk, most kinds of vegetables and fruits, poached eggs, light puddings, custards, jellies, and animal broths. The

* 3. R. Olei Jecoris Aselli, ʒvj.
Liq. Potassæ, ʒss.

Aq. Ment. Piperit. ʒv.
Misee, ft. Mistura. Dosis ʒj.
Vel,

4. R. Olei Jec. Aselli, ʒvj.
Pulv. Tragacanth. fs. ʒij.

Aquæ Anni. ʒv.
Misee, ft. Mistura. Dosi ʒj.

† 5. R. Bismuth Nitratis, gr. ʒj.
Pulv. Acacie,
Sacchari albi, āā gr. ij.
Ft. Pulvis in cyatho lactis sumend.

* 3. Take Cod Liver Oil, six drachms.
Solution of Potassa, half a
drachm.

Peppermint Water, five ounces.
Mix. Dose, one ounce.
Or,

4. Take Cod Liver Oil, six drachms.
Compound Tragacanth Powder,
four ounces.
Annisced Water, five ounces.

Mix. Dose one ounce.

† 5. Take Nitrate of Bismuth, six grains.
Powdered Gum Arabic.
White Sugar, of each two grains.
To be administered in a cupfull of milk.

different kinds of shell-fish (but more particularly oysters, lobsters, crabs, prawns, and cray-fish) may also be proper, if very fresh. Where the symptoms are but trifling, and the patient cannot well refrain from animal food, he may then be allowed such as is of the lightest nature and most easily digested. All highly seasoned dishes, and fermented liquors, but more particularly spirituous ones, are to be avoided.

Milk of itself is a valuable remedy in phthisis. That of the ass is usually preferred to any other; but it cannot always be obtained: besides, it is generally taken in a very small quantity; whereas, to produce any effect, it ought to make a considerable part of the patient's diet. Instead of taking half an English pint night and morning only, as is usually practised by phthisical patients, they ought to take it at least four times a-day, eating a little bread with it, so as to make a kind of meal.

If milk should happen to purge, it may be mixed with a little of the powder of prepared chalk, or with a small quantity of the *confectio rosæ Galliæ*.

The best effects have been known to proceed from a long-continued use of women's milk, which is indeed the best of all others for consumptive persons; but as it is not to be obtained in a sufficient quantity, we are generally obliged to substitute either asses' milk or that of cows.

The milk of cows, although not so easily digested as that of asses or mares, may be rendered much lighter by allowing it to stand for some time, and then taking off the cream.

In cases of incipient phthisis a free use of buttermilk has frequently been attended with much advantage. In order to make it sit easy on the stomach, it should at first be taken sparingly, and the quantity gradually be increased.

In addition to a well-regulated diet, the patient should breathe a free and pure air, and as that of a large town or city, loaded as it is with smoke and effluvia, must be considered as hurtful, he should be sent into the country, and a situation selected which is sheltered from cold bleak winds, and where the soil is gravelly.

It will be necessary, also, that the patient avoids any particular irritation of the part affected, which may arise from the violent exercise of respiration, as in singing, playing on wind instruments, or making long and loud declamations: he is likewise to avoid going into crowded rooms, the air of which, from being inhaled by many different people, becomes at length very unfit for respiration, particularly in those whose lungs are already in a weak and irritable state; he is to refrain from placing his body in such a position, either in reading, writing, or following his ordinary occupation in life, as that the capacity of the thorax shall be at all straitened in consequence of pressure against it; he is to shun all kinds of bodily exercise which require much exertion; and in particular, he is carefully to guard against any exposure to cold,

which never fails to determine a greater quantity of blood to the lungs and other internal parts than what is natural.

With the view of guarding against any diminution of cutaneous perspiration, in consequence of an exposure to cold, he should wear a flannel waistcoat next to his skin, together with drawers of the same, and stockings of cotton or worsted. Such a dress may be found a little irksome at first; but time soon reconciles it, and in the end renders it truly desirable and comfortable.

Where the patient cannot bear flannel next the skin, he may make trial of calico, which will keep up a more equable temperature on the surface of the body than linen, and guard against the action of external cold. He is by all means to avoid exposing himself to the piercing north-east winds of this country.

In our climate, tubercles are evidently induced and accelerated in winter, and retarded in summer. A person gets a dry cough in winter or spring, which goes off as the summer advances, and was regarded as a catarrh; but tubercles were forming: if, therefore, such a person could be removed to a warm climate before the winter comes on, he might escape an attack at this period, and by continuing there for a few years may be perfectly recovered. Going to a warm climate is not merely avoiding what might be hurtful; it is applying a remedy which has the best chance to prove beneficial.

It may perhaps be admitted, that the cold and variable temperature of the winters in England is one great source of phthisis in this country, and when the disorder is once formed, greatly contributes to its fatal termination; and that a warm and equable temperature in some measure prevents the formation of the disease, and when it has taken place in only a slight degree, possesses some power in retarding its progress.

In the early stage of consumption, that is to say, when suppuration and ulceration have not yet taken place, it appears, from the Report of Sir James Macgregor, that the disease was checked by the climate of the Peninsula* among those of the army affected with phthisis; but that when suppuration and ulceration had ensued, it ran even a more rapid progress than in England; and the same remark has been made in regard to the East and West Indies.

Where tubercles have suppurated and are discharging, a voyage to a warm climate generally accelerates the progress of the disease; but the mild and comparatively equable temperature of the ocean is beneficial for those in whom there is only a tendency to phthisis or hæmoptysis. It is indeed a well-established fact, that a warm climate is only advantageous in cases of incipient phthisis. Per-

* See his Sketch of the Medical History of the British Armies in the Peninsula of Spain and Portugal, in vol. vi. of the Medico-Chirurgical Transactions.

sons who have passed the first stage of pulmonary consumption will derive no benefit from a journey to the South of Europe or elsewhere. Those who labour under confirmed phthisis should never quit their own country. By leaving it, they will lose many comforts; they most probably will be deprived of the attendance of their nearest and dearest friends, as well as that of the medical men in whom they can place confidence, as the English are apt to be prejudiced against foreign physicians; they will, moreover, expose themselves to much anxiety and fatigue—and all this for the vague hope of recovery or prolonging life; an expectation very seldom, if ever, realised. If they remain at home, which they had best do in all cases of confirmed phthisis, they should live throughout the winter in a regulated temperature.

If the patient's case is one of incipient phthisis only, and his circumstances will admit of removing in due time, that is to say, on the first threatenings of the disorder, from this climate to one in which the temperature is warm during winter, he may do so. The islands of Madeira and Malta, Lisbon, Italy, or the south of France, have been recommended as proper places.

For persons liable to catarrhal or consumptive complaints, the most important properties of the climates of other countries are, warmth and equability of temperature, especially in the winter months. The islands of Madeira and Malta present, numerically, a mean temperature for the winter months; but Pisa, Nice, Villa Franca (very near the latter), and Hieres, are certainly the most desirable places on the Continent for an invalid.

A female writer* of some celebrity informs us, she is convinced, by experience, that the lives of many consumptive patients might be saved were they sent by sea to Leghorn, advised to winter at Pisa, cautioned against travelling much by land, and, above all things, interdicted from crossing the Apennines and Alps—which people very frequently do, in order to spend the summer months in Switzerland, one of the most unequal climates in Europe. She thinks that in pulmonary complaints, Pisa is entitled to a decided preference over Nice, Massa, Florence, Rome, or Naples, or indeed to any other place in Europe, from the beginning of October till the end of April. She was advised to travel by land to Italy, and therefore she passed over to France. Nice was recommended to her as the best winter climate, and she therefore spent many months in that city; but experience soon convinced her that she might have adopted a more eligible plan; for long journeys overland on the Continent are, to consumptive persons, dangerous experiments, owing to the accommodations being so very indifferent, that it is scarcely possible for an invalid to sleep at an inn out of a great town without suffering. To consumptive persons and invalids in

* See Starke's Letters, vol. ii. p. 261.

general, she therefore recommends the going to Italy by sea in a vessel bound to Leghorn, and so wintering at Pisa.

When the patient's circumstances or business will not admit of his removing to a more temperate climate, he must endeavour to pass his winter in some place which is dry and well-sheltered from cold bleak winds, where the air is free and pure, and the soil of a gravelly nature. The mild and sheltered vales of Devonshire, but more particularly Sidmouth, Torquay, and Penzance in Cornwall, offer desirable situations of this nature; but the latter may be considered as entitled to a decided preference. It has, indeed, been thought by some as equal to any situation abroad; and therefore the victim to consumption will not find it necessary to flee, an exile from his home and friends, to seek a doubtful advantage in a foreign climate.

From a register of the weather at Penzance, by Dr. Forbes*, the mildness and equability of the temperature of that place are evident. He observed that the maximum temperature of July was only 78° of Fahrenheit, the minimum of December only 33°, and the mean range of the barometer 1.48 inches.

With the enjoyment of a free and pure air, the patient should take daily moderate exercise either in a carriage or on horseback, but more particularly the latter. By taking it in progressive journeys through different parts of the country, in fair and settled weather, the efficacy of the remedy, great as it may be at other times, would be much increased; for in such a tour the mind would find an ample store of amusement, and be diverted from any train of unpleasant thought. The pursuit of some object, at the same time, might probably add to the effect. All violent exertions, such as dancing, &c., liberties in diet, and going to crowded public places, are most cautiously to be avoided.

If the disease has made considerable progress, and the patient is thereby prevented from exposing himself out of doors during the winter and spring, he must be content to live in chambers subject to very little change from the atmosphere, and heated from 62° to 65°, which temperature will be most suitable. A stove may be employed for the purpose, and a preference should be given to one of porcelain (like the German and Russian stoves) over one of iron, as a very unpleasant smell is occasioned by the latter. Dr. Buxton† is, however, of opinion, that in the common shop-stove, or ironing-stove used in laundries, we possess all that is necessary for the purpose of the proposed remedy.

Upon the principle of amusing the mind, and at the same time of having a desirable end to be obtained, many phthisical

* See *Annals of Philosophy* for March, 1819.

† See his *Essay on the use of a regulated Temperature in Winter Cough and Consumption*.

patients are yearly sent to the Hot-wells at Bristol. The waters of these wells have long been extolled for their supposed good effect in consumptive cases; but in my humble opinion they are by no means deserving of the credit ascribed to them, as, during a residence of some time at and near these wells, I cannot charge my memory with a single instance where any person labouring under a confirmed phthisis experienced much relief from their use alone.

That many persons who have been of a phthisical habit have derived great benefit from resorting to the Bristol Hot-wells I am ready to admit; but this should not be attributed wholly to the waters. The horse exercise, which is taken daily by such patients, on a fine airy down, where most beautiful views and rich landscapes are presented to the eye on every side; the salubrity of the air; the healthfulness of the situation, and the frequent attendance on the different amusements which are furnished at these wells and those at Clifton, prove, beyond all doubt, most powerful auxiliaries. Places of public resort afford relief to the mind of invalids, and serve to keep it in the same active state that exercise does the body; preventing thereby that indulgence in gloomy reflection, to which the want of cheerful scenes and agreeable company is apt to give rise in those who are in an indifferent state of health.

The opinion which I have here offered on the efficacy of the Bristol Hot-wells' waters, seems, however, by no means to accord with that entertained of them by a gentleman who some time ago published a dissertation on their chemical and medical properties.* On the subject of pulmonary consumption, he observes, that the utility of a journey to Bristol, undertaken while a cure is yet practicable, is demonstrated by hundreds of examples annually; where the disease is prevented in many, and suspended or mitigated in others. Still I agree with Dr. Beddoes†, that the fine things which medical men put into their pamphlets about the water of the places where they constantly or occasionally reside, are to be received with a large share or weight of allowance. Nay, I am decidedly of opinion, that at least three-fourths of the cures attributed to all mineral waters, ought rather to be placed to the account of a difference in air, exercise, diet, amusement of the mind, and the regulations productive of greater temperance, than to any salutary or efficacious properties in the waters themselves.

Respecting the composition of the Bristol water, it appears, from Dr. Carriek's experiments, to consist of the following principles: a wine gallon of 231 inches is impregnated with

* See Dr. Carriek's Dissertation on the Chemical and Medical Properties of the Bristol Hot-wells' Water.

† See his Manual of Health, p. 337.

Muriated magnesia (chloride of magnesium)	7 $\frac{1}{4}$ grains.
Muriated soda (chloride of sodium) - -	4, „
Vitriolated soda (sulphate of soda) - -	11 $\frac{1}{4}$ „
Vitriolated lime (sulphate of lime) - -	11 $\frac{3}{4}$ „
Carbonated lime - - - -	13 $\frac{1}{2}$ „
<hr/>	
Making together of solid matter - -	47 $\frac{3}{4}$ grains,
<hr/>	
Carbonic acid gas - - - -	30 cubic inches.
Respirable air - - - -	3 „
<hr/>	
Making together of gaseous fluids - -	33 eubic inches.

On the supposed virtues of this water in phthisis, there has, indeed, prevailed much diversity of opinion, and many have denied that it possesses any peculiar power superior to simple water. Dr. Saunders* thinks, that although it is by no means a cure for consumption, still it will be found to alleviate some of the most harassing symptoms in this formidable disease. He observes, it is particularly efficacious in moderating the thirst, the dry burning heat of the hands and feet, the partial night-sweats, and the symptoms that are peculiarly hectic; and thus, in the early stages of phthisis, it may probably contribute to a re-establishment of health; and even in the latter periods it may considerably relieve when the prospect of a cure has long been doubtful, if not hopeless.

Short voyages on sea have been much recommended to consumptive persons, under the idea that sailing is of all modes of exercise or conveyance the smoothest and most constant. The good effects produced by sea voyages seem to depend, however, chiefly on the purity of the air, assisted somewhat, probably, by the occasional vomiting, which persons unaccustomed to be on board of a ship usually experience.

In concluding this account of the influence of climate upon the phthisical patient, we cannot do better than extract the following observation from the classical work upon this subject by Sir James Clark: — “But neither travelling, nor change of climate, nor the combined influence of both will produce much permanent benefit, unless directed with due regard to the nature of the case and aided by proper regimen. And here I beg to caution the invalid who goes abroad for the recovery of his health, not to expect too much from the change of climate. The air or climate is often regarded by patients as possessing some specific power, by virtue of which it directly cures the disease. This is a very erroneous view of the matter, and not unfrequently proves the bane of the invalid by

* See his Treatise on Mineral Waters, p. 195.

leading him in the fulness of his confidence in climate to neglect other circumstances, an attention to which may be as essential to his recovery as even that in which all his hopes are placed." *

CACHEXIA AFRICANA, OR NEGRO CACHEXY.

THIS disease, known by the name of *mal d'estomac* among the French, and by that of dirt-eating in our West India colonies, is frequently to be met with among negroes, but more particularly those imported from Africa. Mons. Sonnini makes mention, in his travels through Egypt, that a propensity for eating earth is a disease frequently to be met with likewise among the Egyptians. Between it and chlorosis there is, in many respects, a great similarity; but they differ in this circumstance, that the latter only affect females, and that principally about the age at which menstruation ought to commence; whereas the former affects males as well as females, and is often to be met with in children six or seven years old, as I have seen happen in various instances.

Cachexia Africana evidently arises in negroes from a want of due energy or vigour in the system, induced by various debilitating causes, as grief and despondency, occasioned by their being separated from their native country, families, and friends, and reduced to a state of bondage; by poor diet, hard labour, and harsh treatment. With some, the disease is, however, constitutional, and proceeds from general relaxation, a vitiated state of the stomach, and bad digestion. Negroes imported from the coast of Africa, who are of an inactive, indolent habit, and children of lax fibres, and who have been badly nursed and afterwards neglected, are most liable to its attacks.

Nostalgia, in which there prevails an insurmountable desire of returning to one's own country, is a disease somewhat similar to the negro cachexy. It is derived from the Greek words *νόστος*, return, and *ἄλγος*, grief, because it is only cured by returning to the paternal roof. The French †, among whom the disease is denominated *mal du pays*, as also the Swiss, are said to be particularly liable to it; and the latter, when taken into foreign service, very frequently desert, from this cause. The Scotch Highlanders and Biscayans, when absent from their home, are also said to be peculiarly apt to be affected with every circumstance that recalls it to their minds. It has indeed been observed, that those who inhabit mountainous countries are most subject to this *maladie du pays*; probably because their habits of life are essentially different from the customs and manners of other parts.

The effects of nostalgia on some Africans imported into the West India colonies, are often very violent, and impel them not

* Sir James Clark on Climate, p. 12.

† See Recollections and Essays, by F. A. De Chateaubriand, vol. ii. p. 138.

unfrequently to dreadful acts of suicide. Sometimes it plunges them into deep and incurable melancholy, which induces the unhappy sufferers to end a miserable existence by a more tedious, though equally certain method, that of dirt-eating.

Cachexia Africana shows itself by a fondness for solitude, and an indulgence in grief and despondency, together with the loss of appetite, constant pain in the stomach, difficulty of breathing upon the least bodily exertion, palpitations of the heart, paleness of the face and palms of the hands, whiteness of the tongue, with an appearance like stains of ink upon it, paleness of the lips, drowsiness, inactivity, unwillingness to attempt and also inability to perform motion, and general debility. The tunica adnata is of a glossy whiteness, the skin of an olive complexion and cold to the touch; the eyelids, face, and extremities show evident signs of an extravasation of water in their cellular membrane, and the unhappy sufferer can only breathe in an erect posture, from water being likewise collected in the chest and cavity of the abdomen. The stools are, at the same time, of a white or clay colour, the urine is scanty, and the pulse is always small, and generally becomes quicker as the night approaches.

In consequence of the vitiated state of the gastric juice and impaired digestion, a morbid acidity prevails; and a symptom arises from this cause, which with some has given name to the disease, viz. a habit of eating dirt, chalk, or whatever will counteract acrimony.

This vitiated action is propagated throughout the whole alimentary canal; the lacteals no longer absorb healthy chyle; hence the lymphatic glands become indurated and inflamed; the liver also is enlarged and of a scirrhus hardness; the blood, poor, colourless, and defective in its natural proportion of red globules, no longer stimulates the heart and arteries to action; hence asphyxia and sudden death.

Fatal consequences usually attend this disease. On dissection, the stomach is often found much enlarged, softened, and pale; the liver is of an increased size, scirrhus, and always preternaturally white; biliary concretions are sometimes met with in the gall-bladder; the bile is never of a healthy appearance, but usually of a thin watery consistence, and of a slightly yellow or straw colour; the mesenteric glands are indurated and enlarged; polypous concretions are occasionally found in the heart, and serous effusions in the cavities of the chest and abdomen.

The proper indications of cure seem to be, to strengthen the general system, and, to correct the morbid acidity which prevails.

To answer these purposes, the patient must be allowed a generous and nutritive diet, consisting principally of animal food and wine, or weak fermented liquors. Cane juice, boiled to the consistence of a thin syrup (as in the first process of sugar-making), is also of a very restorative nature, and ought during crop-time to be allowed liberally. With a generous diet, the patient should be made to

take some moderate exercise daily, as a want of this will not fail to increase the general debility, and add to the disease. Warm clothing, with occasional frictions by means of flannels, will likewise be proper.

To assist the effects of these means, we must put the patient under a course of stomachic bitters, joined with aromatics, different preparations of the cinchona bark, with myrrh and chalybeates, combined with the carbonate of the alkalies. (See *Scrofula*.)

The *mistura ferri composita* will be likely to prove a most valuable remedy in this disease.

When costiveness prevails, it ought to be removed by a use of some warm stomachic laxative, such as the *tinctura rhei composita*, or *tinctura aloes composita*, or the bitter tincture found below.*

In order that the depravity of appetite might not be indulged, the patient should be lodged in a room which has a boarded floor, and where he cannot possibly get any earthy matter; and when he goes out for exercise, he should be accompanied by an attendant, who will not permit him to eat it.

From my own observations, during a long residence in the West Indies, I am ready to admit, with Dr. Chisholme†, that mountainous situations do not agree with cachectic negroes so well as low ones; but I cannot with him attribute the effect to the influence of marsh effluvia. Noxious vapours arising from stagnant waters and marshy grounds, acted upon by a powerful sun, prove, in warm climates, a never-failing source of disease under all circumstances, and under every condition of the body. The cachectic negro cannot endure the cold, chilling, and damp air of a mountainous situation; but in a low one (the more remote from marshy grounds or stagnant waters the better), he feels warm and comfortable, and breathes a pure, dry air, moderated in its temperature by the refreshing and reviving breezes which come off the sea. I have further to observe, that negro cachexy is a very common disease on the swampy banks of the great rivers of Guiana, and in the marshy districts of Trinidad.

*	Tinctura Amara.	*	The bitter Tincture.
1. R. Aloes Socotrin, ℥iv. ad ℥v.	Gummi Myrrhæ, ——— Mastiches, ——— Benzoes, Radie. Calumbæ concis. sing. ℥ij. Radie. Gentianæ, ℥jss. Croci Stigmatum, ℥j. Spirit. Vini Gallici, lb. ix. Spirit. Vini Hollandici, lb. iij. Macera permense et cola. (Dr. Copland.)	1. Take of Socotrine Aloes, four to five ounces.	Gum Myrrh; ——— Mastich; ——— Benjamin; Cut Calumba root, of each two ounces. Gentian root, an ounce and a half. Saffron, an ounce. Brandy, nine pounds. Hollands, three pounds. Soak for a month, and strain. (Dr. Copland.) The celebrated Droque Amere of the Jesuits.

† See the New York Medical Repository.

CACHEXIA APHTHOSA, OR CHRONIC THRUSH.*

CHRONIC thrush is a disease very frequently to be met with among the inhabitants of our West India colonies, many cases of it having occurred during my practice there, but which is likewise apt to prevail in those northern countries where the cold is combined with a considerable degree of moisture, or where the soil is of a very marshy nature. It may in some cases be considered as an idiopathic affection, but it is more usually symptomatic. It is dependent on a cachectic state of the whole system, characterised by ulceration of the mouth, tongue, fauces, and intestinal canal.

It shows itself at first by an uneasy sensation or burning heat in the stomach, which comes on by slow degrees, and increases gradually in violence. After some time, small pimples, of about the size of a pin's head, appear on the tip and edges of the tongue, and these, at length, spread over the whole inside of the mouth, and occasion such a tenderness and rawness of the parts that the patient cannot take any food of a solid nature; neither can he receive any vinous or spirituous liquor into his mouth without great pungency and pain being excited: little febrile heat attends, although there is some thirst, but the skin is always remarkably dry, rough, and without the least moisture on it; the countenance is of a pale olive colour, the pulse is smaller and more languid than in health, general coldness is felt over the whole body, but more particularly in the extremities; and the urine is small in quantity, and sometimes exhibits a milky or wheyish turbidness.

These symptoms will continue probably for some weeks, the general health being sometimes better and sometimes worse, and then the patient will be attacked with acid eructations, and a vomiting of aerid phlegm, as likewise with a severe purging, which greatly exhausts his strength, and produces considerable emaciation of the whole body. The stools indicate a defective biliary secretion, strongly resembling thick oatmeal gruel in an incipient state of fermentation; but there is no pain or enlargement of the liver, nor jaundice, although the complexion is somewhat of the olive colour. After a little time the symptoms cease, and he again enjoys better health; but sooner or later the aerid matter shows itself once more in the mouth, with greater virulence than before, and makes frequent translations to the stomach and intestines, and so from these to the mouth again, until at last the patient is reduced to a perfect skeleton. Death in its approach still lingers, and seems, as it were, unwilling to overtake its languid victim, until, worn down with fatigue and inquietude, he

* The common species of Aphthæ, as principally affecting infants, is included among the diseases peculiar to them; but in Dr. Cullen's nosological arrangement it stands among the Exanthemata.

sinks into a state of exhausted apathy, and life at length is extinguished.

General relaxation, exposure to cold combined with great moisture, obstructed perspiration, and an acrimony of the humours, are supposed to be the causes which give rise to the chronic thrush. Elderly people, and persons with a shattered constitution, are most liable to its attacks.

It often admits of palliation from the resources of medicine, but it is seldom cured even at an early stage of the disease. When engendered beneath the influence of a tropical sun, or when it has been neglected, is of long standing, or has made its attack in an advanced period of life, it will terminate fatally.

The principal appearances to be observed on dissection are the aphthæ, which extend through the whole of the alimentary canal. The muscles throughout the body are relaxed and flaccid, and their connecting cellular membrane is divested of any fat.

It will in all cases be advisable to begin the cure with giving a gentle emetic, to dislodge the acrid phlegm with which the stomach is usually loaded; and if any acidity prevails afterwards (which may be known by sour belchings attended with a degree of heat and pain), a little magnesia, or a small quantity of the absorbent mixture* here recommended, may then be taken occasionally.

Wherever we suspect the disease to have arisen, or to be kept up from the ingesta, then, besides an emetic, it may be right to cleanse the primæ viæ by some gentle cathartic; as the irritating matter, when permitted to accumulate in the alimentary canal, increases the morbid affection of the intestines. A combination of rhubarb with magnesia, or the chloride of mercury, will be a proper laxative. Medicines of this nature are, however, to be administered only in the first stage of the disease, as the risk of inducing excessive purging more than counterbalances the chance of advantage from them. In an advanced stage of the disease, where it is found necessary to evacuate the intestines, emollient clysters may be employed.

When a purging arises, we should have recourse to astringents joined with opiates, agreeably to the prescriptions below†, or as

* 1. R. Magnesiæ, ʒj.
Aq. Puræ, f. ʒvss.
Spirit. Cinnam. f. ʒij.
Liquor. Ammon. f. ʒj. M.
Capiat cochl. ij. larg. pro re natâ.

† 2. R. Confect. Catechu, ʒij.
Aq. Cinnam. f. ʒij.
— Puræ, f. ʒij.
Tinct. Kino, f. ʒij.
— Opium, m xl. M.

ft. Mistura, cujus sumat cochl. ij. vel iij.
ter in die.

* 1. Take Magnesia, one drachm.
Pure Water, five oz. and a half.
Spirit of Cinnamon, three drachms.
Solution of Ammonia, one drachm.
Of this mixture take two table-spoonfuls
occasionally.

† 2. Take Confection of Catechu, two
drachms.
Cinnamon Water, two ounces.
Pure Water, three ounces.
Tincture of Kino, two drachms.
— Opium, forty drops.
Of this mixture let two or three table-
spoonfuls be taken thrice a-day.

advised under the head of Diarrhœa; besides which, the patient should drink about a pint a-day of the *mistura cornu usti*, or the same quantity of lime-water with an equal proportion of milk.

Where there is no tendency to excessive purging, opiates perhaps may be omitted, unless they be necessary to procure sleep or allay irritation.

In mitigating the pain, exhaustion, and despondency, which signalise the ravages of the disease towards its fatal termination, opium is indeed the remedy principally to be relied on.

With the view of determining the humours to the surface of the body, it will be right to give frequent small doses of some diaphoretic, such as the *pulv. ipecae. compos.*; and to assist their operation, flannel should be worn next to the skin. Should these fail in exciting a proper perspiration, and the patient continue to waste in flesh, a tepid bath may prove serviceable, and where a natural one can be procured, it ought to have the preference.

To remedy the inconvenience arising from the soreness of the mouth and tongue, these should be washed frequently with some kind of healing astringent gargle.*

When the rectum is affected, mild injections are proper, and produce effects similar to those of gargles in the fauces; they should consist of mild mucilaginous and gently stimulating decoctions, such as veal broth, boiled with rice and bruised turnips, or turnip radishes, which will likewise prove an excellent article of diet.

In mild cases of the disease, a decoction of *einehona* bark is

<p><i>Vel,</i> 3. R_y Mistur. Cretæ, f. ʒiv. Spirit. Cinnam. f. ʒj. Tinct. Catechu, f. ʒij. ———Opii, ʒxl. M.</p>	<p><i>Or,</i> 3. Take Chalk Mixture, four ounces. Spirit of Cinnamon, one ounce. Tincture of Catechu, two drs. ———Opium, forty drops. Mix them. The dose may be the same as the former.</p>
<p>* 4. R_y Infus. Rosæ Compos. f. ʒvj. Aluminis, ʒjss. Mel. Optim. f. ʒj. ft. Gargarisma.</p>	<p>* 4. Take Compound Infusion of Roses, six ounces. Alum, one drachm and a half. Honey, one ounce. Mix them for a gargle.</p>
<p><i>Vel,</i> 5. R_y Zinc. Sulphat. gr. x. Aq. Rosæ, f. ʒviiij. Tinct. Myrrh. f. ʒj. M.</p>	<p><i>Or,</i> 5. Take Sulphate of Zinc, ten grains. Rose Water, eight ounces. Tincture of Myrrh, one ounce. Mix them.</p>
<p><i>Vel,</i> 6. R_y Decoct Hord. f. ʒvj. Mel. Rosæ, f. ʒj. Aluminis, ʒj. Tinct. Myrrh. f. ʒss. M.</p>	<p><i>Or,</i> 6. Take Decoction of Barley, six ounces. Honey of Roses, one ounce. Alum, one drachm. Tincture of Myrrh, half an oz. Mix them.</p>
<p><i>Vel,</i> 7. R_y Aq. Fervent. f. ʒv. Mellis Boracis, ʒj. Tinct. Opii, ʒl. M.</p>	<p><i>Or,</i> 7. Take Warm Water, five ounces. Honey of Borax, one ounce. Tincture of Opium, forty drops. Mix them.</p>

often used internally, and with much advantage. In those cases where it puts on an alarming appearance, this preparation of cinchona should be employed as a gargle, and the powder be administered in as large doses as the stomach will bear. If it excites a purging, a few drops of tinct. opii may be added to each dose, or we may substitute the sulphate of quinine, as prescribed in Intermittents.

In its first, or simply dyspeptic state, the disease may often be removed in northern climates by a few doses of calomel, and some bitter infusion combined with magnesia or rhubarb. Occasionally mercury has been used, both externally and internally, in this disease with advantage: externally, in the form of ointment or plaster to the hepatic region; internally, in that of the hydrargyri chloridum combined with opium.

The diet in cachexia aphthosa should consist only of such things as are light and nutritive, as milk, mucilaginous soups, jellies, preparations of barley, sago, rice, Indian arrow-root, plantains, bananas, &c.; lime-water mixed with milk may be used for ordinary drink. It will be best to abstain from wine, spirits, and all fermented or fermenting liquors. If any is used, Port wine, when diluted with water, may be the least injurious.

To restore the lost vigour and tone of the system, astringent bitters, such as infusions of cascarilla and cinnamon bark, of lemon and pomegranate rind in lime-water, with chalybeates, myrrh, and other tonics, may be used, as advised under the head of Dyspepsia; together with such moderate daily exercise in the open air in mild weather as the strength will admit of. If the patient's circumstances will allow of his removing from a warm climate to a cold one, where the air is dry, he should do it before the disease becomes inveterate.

ORDER II.

INTUMESCENTIÆ.

SWELLING of the whole or a great part of the body externally.

I.—INTUMESCENTIÆ ADIPOSÆ, OR FATTY SWELLINGS.

POLYSARCHIA, OR CORPULENCE.

CORPULENCE, when it arrives at a certain height, becomes an absolute disease. A certain proportion of fat is indicative of health, and denotes being in good condition; nay, it is even in some measure conducive to beauty, but when in excess amounting to

obesity, it is not only in itself a disease, but may be the cause of many fatal effects. In many instances, angina pectoris, among other disorders, may, in my opinion, be attributed to, or be closely connected with, an accumulation of fat about the heart. The increase of the omentum particularly, and the accumulation of fat about the kidneys and mesentery, swell the abdomen, and obstruct the motions of the diaphragm; whence one reason of the difficulty of breathing, which is peculiar to corpulent people; while the heart, and large vessels connected therewith, are in like manner so encumbered, that neither the systolic nor diastolic motion can be performed with sufficient freedom, whence weakness and slowness of the pulse; but when the whole habit is in a manner overwhelmed with an oily fluid, the enlargement of the cellular interstices will necessarily interrupt the general distribution and circulation throughout the nervous and vascular systems, impeding the action of muscular fibres, and producing inactivity, depression of spirits, inaptitude for study of any long continuance, laborious respiration, oppression about the præcordium, insensibility, somnolency, a disposition to apoplexy, and death.

A great inconvenience to which very corpulent persons are exposed is the being debarred of equestrian exercise, and the difficulty of being conveyed from one place to another. Two curious anecdotes of this nature are mentioned by Mr. Wadd in his *Comments on Corpulence*.*

The general exciting cause of obesity, independent of peculiarity of habit, is certainly a free indulgence of the appetite in the use of very nutritive food and fermented liquors, conjoined with an inactive life; since it is only among those who enjoy the means of obtaining the comforts of life without hard labour that this state is observed. The citizen in easy circumstances, the indolent rector, the opulent farmer (and especially their wives, who enjoy their feeding without anxiety or much exercise), the masters and mistresses of well-frequented inns, and the serjeants of regiments in peaceable quarters, or of the militia, &c., are those whose rotundity of belly marks the superabundance of their ingesta, and who, upon the least exertion, perspire and wheeze under a load with which they have voluntarily encumbered themselves. Obesity is one of the evils clearly connected with repletion.

When a person of a constitution which is predisposed to obesity is enabled to indulge in good feeding, leads a calm, indolent life, free from mental inquietude, and sleeps much, corpulence generally ensues. The causes of corpulence being thus well understood, the means of prevention and removal are not less obvious: in this the patient must, in a great degree, minister to himself; the prevention and cure will depend upon the proper regulation of his diet, exercise, and sleep. These simple means, conjoined with a strict attention to personal cleanliness, are the best that

* See pages 24 and 25.

can be adopted for the enjoyment of good health. Medicine will only be necessary to obviate particular symptoms, or diseases arising from or connected with it.

The disease frequently, however, steals on so imperceptibly, that it becomes inveterate before people begin to think of pursuing any means for obviating it.

To get rid of too much fat without any injury to the constitution, the patient should, in a very gradual manner, diminish the usual quantity of his aliment, taking less nutritious (especially fatty) substances for food; he should drink as little as he can with ease to his sensations, and particularly of malt liquors; he should use regular and daily active exercise, abstain from suppers, take short rest, sleep but few hours, and rise early every morning. To assist these means, and compress the bowels (increasing their absorption probably thereby), he may put a proper bandage round the belly, so that it can be tightened or relaxed with ease. An under waist-coat, with two or three rows of buttons, will answer this purpose very well. By a rigid pursuance of these means for a due length of time, I have no hesitation in affirming that the most corpulent and unwieldy man or woman may frequently by perseverance be reduced within moderate bounds, with an acquisition of health, strength, and vigour, both of body and mind.

Newmarket affords abundant proofs how much may be done by active exercise and a spare diet, as joekeys have been known to reduce themselves a stone and a half in the space of a week or two. To the question proposed to a person* well versed in the business of training, "Would he recommend a similar process to reduce corpulency in other people, whether male or female?" the answer was in the affirmative, as he had *perceived from experience* that the constitution does not appear to be injured by it. It will, however, be most prudent in all cases to reduce obesity in a gradual manner, which may be done effectually by keeping the eyes open, the mouth shut, and the legs in motion; or, in other words, by eating and drinking sparingly, by sleeping little, and taking much active exercise.

The case of Mr. Thomas Wood, miller, which was published in Vol. II. of Medical Transactions of the College of Physicians, is likewise strongly illustrative of what may be accomplished in circumstances of extreme corpulence, and the diseases consequent thereon, by a rigid adherence to the plan just recommended.

"There is one class of medicines so universally applicable to all cases of obesity, that I think a trial of them should never be omitted. The chemical affinities of alkalies for fat point them out as proper alteratives in this complaint, and experience proves that they are suitable to the state of the digestive organs. The most eligible one is liquor potassæ, and it may be administered in much larger quantities than any other. If given in milk and water, we

* See Code of Health, by Sir John Sinclair.

may safely commence with half a drachm, and raise the dose to a drachm and a half, three times a day. The milk covers the taste of the potash better than any other vehicle. It has, truly, the disadvantage of saponifying a portion of the remedy, but there is no evidence to prove that its efficacy is thereby endangered; indeed, soap itself has been strongly recommended. A physician, whose case is recorded by Dr. Henry, reduced himself, by Alieant soap alone, two stones in weight."*

Vinegar and lemon juice are too frequently used by young women to reduce corpulence; but an excessive use of acids is apt to impair the digestive powers, and in the end to bring on a train of dyspeptic and other dangerous complaints.

II.—INTUMESCENTIÆ FLATUOSÆ, OR FLATULENT SWELLINGS.

EMPHYSEMA.

THE term Emphysema, in its literal acceptation, simply signifies an unusual accumulation of air in some part of the body. Practically, however, it is employed to designate two conditions:

1. A collection of air in any part of the areolar tissue of the system; and
2. A condition of lung, marked by an inordinate enlargement of the cells of that organ.

These two divisions are sometimes termed respectively surgical and medical or pulmonary emphysema.

1. Surgical emphysema is generally confined to one place; but in a few cases it spreads universally over the whole body, and occasions a considerable degree of swelling.

It sometimes arises spontaneously, which is, however, a rare occurrence, or comes on immediately after delivery, without any evident cause; but it is most generally induced by some wound or injury done to the thorax, and that affects the lungs; in which case the air passes from these through the wound into the surrounding cellular membrane, and thence spreads sometimes over the whole body.

Emphysema is attended with an evident crackling noise, and elasticity upon pressure; and sometimes with much difficulty of breathing, oppression, and anxiety.

We are to consider it as a disease by no means unattended by danger; but more probably from the causes which give rise to it than any hazard from the complaint itself.

The intentions of cure which we should have in view must be, first, to remove the cause of the disease; secondly, to relieve the urgent symptoms; and, thirdly, to evacuate the collected air.

To answer the first of these, the assistance of surgery will be

* Dr. Thomas Chambers on Corpulence.

necessary, as arising most commonly from a wound or other injury done to the thorax, which at the same time affects the lungs, as in the case of a fractured rib, the ragged edges of which penetrate the pleura and substance of the lungs, and thereby admit of an extravasation of air into the cellular membrane. In such cases the air is to be evacuated by scarifications into the cellular membrane in different parts of the body, as circumstances may require, assisted by proper pressure with the hand.

Violent dyspnœa and anxiety are to be relieved by bleeding and laxatives; and the pain and uneasiness arising from the distension by relaxing applications to the skin, such as the unguentum cetacei, &c.

2. Pulmonary emphysema is anatomically characterised by an abnormal enlargement of the vesicles of the lungs. These little cells or cavities are, in their normal condition, very irregular in shape, smaller in size in the central than in the peripheral portions of the pulmonary organs, and situated close upon the bronchial tubes, or inter-cellular passages. Where the latter do not exist, the cells open into each other — a sacculated arrangement easily seen by altering the distance of the object-glass of the microscope, and bringing different planes into view. Their parietes are formed by an excessively thin and transparent membrane, which, by its re-duplication, forms the divisions between the cells and their inner surface, and is totally unprovided with epithelium. Any causes tending to impair the elasticity of this pulmonary membrane naturally lead to yielding of the walls, and to a consequent dilatation of the cavities of the cells. These causes may be natural atrophy, or fatty degeneration of the membrane, increased functional activity, simple mechanical dilatation, produced by the obstruction offered to the exit of air by impeded bronchi, &c. As a diminution of the elastic and resilient power of the cell-walls is the very basis of every variety of emphysema, so will one symptom be found common to all — a marked prolongation of the period of the expiratory murmur.

The true vesicular inspiratory sound is usually very indistinct, being replaced by the various râles, dry or moist, which proceed from the chronic catarrh attending upon emphysema. Patients suffering from this disease are, therefore, subject to constant and distressing dyspnœa; their skin and lips present a bluish, leaden tint, from the general venous congestion consequent upon the impeded pulmonary circulation. They have habitual cough, attended with mucous or muco-purulent expectoration. Their heart, becoming hypertrophied and dilated on its right side, becomes productive of frequent and distressing palpitations; and, as the disease advances, serous effusion occurs in various parts of the body. The chest of such individuals has always a peculiarly rounded appearance, is tympanitic on percussion, and evidently labours with difficulty to maintain a due supply of air for the oxygenation of the venous blood of the pulmonary artery. The latter condition is shown by

the painful contraction of the intercostal muscles and the general heaving and labouring of the chest.

The treatment of emphysema is unfortunately limited to the palliation of symptoms, as no remedy can be suggested capable of restoring elasticity to the distended pulmonary membrane, and still less of diminishing the capacities of the distended or broken-down lung-cells. Our efforts must be directed, therefore, to control the catarrhal symptoms as well as the general results proceeding from the impeded pulmonary circulation. (See *Bronchitis*, Vol. I. p. 301., and *Catarrh*, Vol. I. p. 491.) One form of pulmonary emphysema is termed interlobular, being caused by the rupture of one or more of the distended cells, and by the consequent extravasation of air into the areolar tissue between the lung-cells. The bubbles of air situated within the lung can give rise to no sound capable of being heard by the auscultator, while those which lie under the pleura pulmonalis may possibly lead to a smooth friction sound during the movements of the lungs. The affection is, however, *per se*, of no vital importance, and needs no further comment.

TYMPANITES, OR TYMPANY.

TYMPANY consists in a violent distension either of the intestines, or cavity of the abdomen, by wind. In the former instance it has been supposed to arise from the sudden suppression of diarrhœa or dysentery, or as a consequence of febrile diseases, or the sudden drying-up of long-continued discharges; from cutaneous eruptions, or a use of crude vegetable aliment; and in the latter from an erosion of the intestines, the effect also of preceding complaints.

Dr. Graves has very properly insisted upon a due attention to diet in the treatment of febrile cases, and has shown that the tympanites occasionally occurring in fever is usually the result of the administration of drastic purgatives, or of too strict an abstinence from food: "Want of food, even in the healthy state of the system, is apt to produce flatulence, weakness, and distension of the stomach: even the abuse of the simplest drinks is apt to produce tympanites. Hence the necessity of not allowing an excessive use of barley water, effervescing draughts, &c., in the treatment of fevers." *

Tympanites intestinalis sometimes comes on suddenly, at others it is more slow in its progress, and preceded (be the cause what it may) by great flatulency, borborygmi, and a frequent expulsion of air upwards and downwards, attended with colic pains. As it advances, the abdomen becomes considerably distended, and retains the same figure under every variation of position. The swelling does not yield much to pressure, and in what it does it soon

recovers its former state; it feels very elastic, but no fluctuation can be perceived. The urine at first is not altered either in quantity or quality; but, in the advanced stage of the disease, a change takes place in both respects, and dysuria and even ischuria sometimes come on. The body is usually very costive, the appetite is impaired, thirst, heat, and pyrexia attend, and general emaciation ensues.

In time the respiration becomes difficult, with much anxiety and cough; the strength is exhausted, the belly is enormously swelled, and the patient is not unfrequently destroyed in consequence of supervening gangrene.

In tympanites abdominalis the swelling is more equal than in the former species, the tension greater; it is more elastic, and, upon percussion, sounds like a drum or bladder filled with air. Moreover, there are no discharges of flatus.

Tympanites is easily to be distinguished from ascites by the absence of fluctuation, by the tense feel of the abdomen, by the quick reaction of the parts after removing the pressure of the finger, by the frequent desire to belch, and by the state of the bowels and urine at the commencement of the disease.

It is, almost in every instance, an obstinate and dangerous disease, slow in its symptoms, marking a total relaxation of the system; and therefore it frequently terminates in dropsy, showing the same emaciation of countenance, dry cough, and hectic state, in the end. An unimpaired constitution, with frequent explosions of flatus, showing that the air is contained within the intestines, may be regarded in a favourable light.

When the wind is confined within the intestines, its evacuation is to be attempted by introducing an unarmed clyster-pipe up the rectum, and keeping it there for some time, so as to take off the resistance of the sphincter; and by giving carminatives, essential oils, spices, and stomachics, which may be combined, as in the following forms*, or as advised under the head of Dyspepsia; and when

* R_p Pulv. Cinnam. Comp.
Extract. Gentian. āā gr. x.

Ol. Anisi, ℥ v.
Syrup. Zingib. q. s. M.
ft. Bolus, 4tis horis sumendus cum cochl.
magnis duobus misturæ sequentis.

R_p Aq. Menth. Pip.
Misturæ Camphoræ, āā f. ʒijss.

Spirit. Ætheris Sulph. f. ʒjss.

Tinc. Card. C. f. ʒss. M.

ft. Mistura, capiat cochl. ij. pro dos.

* Take Compound Powder of Cinnamon,
Extract of Gentian, of each ten
grains.

Oil of Aniseed, five drops.
Syrup of ginger, a sufficiency to
form a bolus, which may be taken every
four hours, with two table-spoonfuls of the
following mixture:—

Take Peppermint Water.
Camphor Mixture, of each two
ounces and a half.
Spirit of Sulphuric Æther, one
drachm and a half.
Compound Tincture of Carda-
moms, half an ounce.

Mix them. The dose may be two table-
spoonfuls.

costiveness prevails, by an occasional use of laxative medicines joined with aromatics and essential oils, or clysters* frequently repeated.

Should these gentle means fail in procuring sufficient evacuations, we must then employ active purgatives; and where there is great irritability of the stomach, with nausea and frequent vomiting, it will be advisable to give them in the form of a pill, as being most likely to be retained. If the disease resists all our endeavours, and the bowels continue obstinately costive, with increasing distension, thirst, heat, and other symptoms of pyrexia, we should then have recourse to the lancet, in order to guard against supervening inflammation and its consequences. It is only in acute attacks, however, that we need dread such a termination.

Antispasmodics of the strongest kinds, such as assafœtida, æther, &c., with infusions of horse-radish and ginger, together with chalybeates, are remedies which have sometimes proved useful in tympanites, and therefore should not be neglected.

To excite the action of the distended intestines, it has been recommended, along with these remedies, to apply cold substances, such as iced water or snow, to the belly, after which it is to be bandaged tight with flannel. A case of severe tympanites, some time ago, came under my care, wherein very great benefit was derived from the frequent application of pounded ice to the abdomen. It is probable that frictions with turpentine, oils, the linimentum ammoniæ fortius, or the linimentum camphoræ, and the hand, might afford some relief, and excite the intestines, when assisted by pressure and other proper means, to discharge the

Vel,
 R₃ Infus. Cort. Cinchon. f. ʒj.
 Tinct. Cardam. C.
 Spirit. Pimentæ, aa f. ʒij.
 ——— Lav. Comp. f. ʒss. M.
 ft. Haustus, ter quaterve in die sumendus.

Vel,
 R₃ Infus. Cascaril. f. ʒj.
 Tinct. Calumb. f. ʒj.
 Spirit Carui,
 ——— Anisi, aa f. ʒjss. M.
 ft. Haustus.
 * R₃ Sem. Anis. Contus. ʒij.
 Flor. Anthemidis, ʒss.
 Coque ex Aq. Fontan. Ojss. ad f. ʒxij.
 Cola. Adde

Sodæ Sulphat. ʒ ss.
 Ol. Terebinth. f ʒ ij. — ʒ ss.

M. ft. enema.

Or,
 Take Infusion of Peruvian Bark, one ounce.
 Compound Tincture of Cardamoms.
 Spirit of Pimento, of each two drachms.
 Compound Spirit of Lavender, half a drachm.
 Mix them, and take this draught three or four times daily.

Or,
 Take Infusion of Cascarilla, one oz.
 Tincture of Calumba, one dr.
 Spirit of Carraway,
 ——— Aniseed, of each one drachm and a half.
 Mix them for a draught.

* Take Aniseed, bruised, three drachms.
 Camomile Flowers, half an oz.
 Pure Water, one pint and a half.
 Boil them until the liquor is reduced to twelve oz., strain it, and add
 Sulphate of Soda, half an oz.
 Oil of Turpentine from two drachms to half an oz.
 Mix them as a purgative draught.

accumulated air. The application of a warm, stimulating plaster, or even a blister, may be tried if these means fail. Mercurial frictions upon the surface of the abdomen, with active purgatives, sometimes prove useful in tympanites.

It has been proposed as a query *, Whether the cold bath, continued long enough to become antispasmodic and relaxant, might not produce good effects in this disease as well as in trismus?

To afford relief in desperate cases, where the air is diffused in the cavity of the abdomen, it may be necessary to have recourse to the operation of paracentesis, or tapping with a small trocar. In this case tonics will likewise be advisable.

During the continuance of the disease, that aliment which is least apt to prove flatulent should be taken, and such things be given as will check the fermentation of the food. The mineral acids and small quantities of ardent spirits will have this effect.

Should we be so fortunate as to remove the disorder, the patient must pay particular attention to his diet, avoiding all food of a flatulent nature, and using only such as is light and easy of digestion. He is at the same time to guard against costiveness, by an occasional use of some stomachic aperient, and to invigorate his body by gentle exercise, and the other tonic means advised under the head of Dyspepsia.

HYDROPS, OR DROPSY.

DROPSY is a preternatural or morbid accumulation of a serous or watery fluid in some parts of the body, impeding or preventing the functions of life, and receives different appellations according to the particular situations in which it is lodged.

When it is diffused through the cellular membrane, either generally or partially, it is called anasarea.

When it is deposited within the cranium, it is called hydrocephalus.

When in the chest, hydro-thorax, or hydro-pericardium.

When in the cavity of the abdomen, ascites.

In the uterus, hydrometra; and within the serotum, hydrocele.

Water is likewise encysted in the ovarium now and then, and is named ascites ovarii.

A modern writer † having remarked, that in many cases of dropsy the urine possesses the property of being coagulated by heat, instead of classing dropsical affections according to their situation, has divided them into those with coagulable and those with uncoagulable urine. (See *Albuminuria*, Vol. I. p. 377.) Perhaps a more proper division, or distinction between dropsies,

* See Dr. Temple's *Practice of Physic*, p. 234.

† See Observations on the Nature and Cure of Dropsy, by J. Blackall, M.D.

would be, such as are connected with general constitutional disturbance, and such as are strictly local. (See *Renal Dropsy*, Vol. I. p. 391.)

The causes of dropsy are, a family predisposition thereto, frequent salivations, excessive and long-continued evacuations, profuse hæmorrhages, great and sudden abstractions of blood by the lancet, a free use of fermented or spirituous liquors (which never fail to destroy the digestive powers), scirrhusities of the liver, spleen, pancreas, mesentery, and other abdominal viscera; preceding diseases, as the jaundice, diarrhœa, dysentery, diabetes, phthisis, asthma, gout, intermittents of long duration, scarlet fever, and some others of the exanthemata; a suppression of accustomed evacuations, the sudden striking in of eruptive humours, ossifications of the valves of the heart and its enlargement, aneurism in the arteries, tumours making a considerable pressure on the neighbouring parts, permanent obstruction in the lungs, rupture of the thoracic duct, exposure for a length of time to a moist atmosphere, laxity of the exhalants, defect in the absorbents, the want of due nutrition, topical weakness, general debility, long-protracted fevers, and whatever powerfully disposes the body to a state of great relaxation.

Dropsy is sometimes the consequence of previous inflammation. Thus, the brain of a child becomes inflamed, and this ends in hydrocephalus, or a collection of water in the brain. Pleurisy not unfrequently terminates in hydrothorax, or accumulation of water in the chest. Peritoneal inflammation is not unfrequently followed by an effusion of fluid in the belly forming ascites and hydrocele, or dropsy of the tunica vaginalis is often the consequence of previous inflammation of the testicle, which has arisen from a blow, or any other injury.

Local anasæra or œdema arises sometimes from pressure made on the veins as by the gravid uterus, swelled glands in the groins or arm-pits, or by a tight garter. The same result occasionally follows, even in a healthy state of the system, by a long continuance in the erect posture. Diminished absorption and increased exhalation, or both united, may be considered as the proximate causes of the different species of dropsy.

ANARSACA OR DROPSY OF THE CELLULAR MEMBRANE.

THIS species of dropsy shows itself at first with a swelling of the feet and ankles (œdema), which for a time disappears again in the morning. The tumefaction is soft and inelastic, and when pressed upon with the finger retains its mark for some time, the skin becoming much paler than usual. By degrees the swelling ascends and occupies the thighs and trunk of the body, and at last even the face and eyelids appear full and bloated. When it has become

pretty general, the viscera are affected in a similar way; the cellular and vesicular structures of the lung partake in the affection, the breathing then becomes difficult, and is accompanied by a cough and the expectoration of a watery fluid. Sometimes, however, it is of a pale whey colour and more copious; the belly is costive, the perspiration diminished, the countenance yellow, and a considerable degree of thirst with emaciation of the whole body, prevails; to these symptoms succeed stupor, heaviness, and a slow fever. In some cases the water oozes out through the pores of the cuticle, in others it raises the entire in small blisters; and sometimes the skin, not allowing the escape of the water, becomes compressed and hardened, and at the same time so much distended as to give the tumour a considerable degree of firmness.

The disease may be regarded as admitting more readily of cure when it arises from topical weakness or general debility than when it has been occasioned by visceral obstruction; as likewise when recent than when it has been of long continuance. The skin becoming somewhat moist, with a diminution of thirst, and an increase in the flow of the urine, are to be regarded as very favourable symptoms. In some few cases nature makes powerful efforts of her own accord, and the disease goes off by a spontaneous crisis either by a vomiting, purging, or an unusual discharge of urine; but this does not often happen. Concomitant organic disease, great emaciation, erysipelatous inflammation, much drowsiness, petechiæ and ecchymosis, hæmorrhage, febrile heat, great thirst, and a quick, small pulse are very unfavourable symptoms.

On opening the bodies of anasarous persons after death, the whole of the cellular membrane is found distended with an aqueous and serous fluid. In the interior of the abdomen, the stomach is not unfrequently found scirrhus, the spleen enlarged and hard, the mesenteric glands much increased in size, and the liver enlarged, indurated, and beset with tubercles. In the thorax, we frequently find, besides water in the cavities of the pleura and pericardium, an enlargement of the heart, adhesions of this to the pericardium, flakes of lymph floating in the water of the pericardium, in the cavity of the chest, or loosely attached to the pleura. Sometimes we meet with white spots or depositions of lymph upon the surface of the heart, ossification of the valves of the aorta, the internal coat of the aorta inflamed, aneurism of the aorta, and, lastly, tubercles, or vomicae in the lungs. When dropsy occurs connected with this state of local disease, it generally assumes the form of anasarea and hydro-thorax, or that of hydro-pericardium.

In the cure of anasarea we are to keep in view the three following indications:—

- 1st. To remove the remote cause of the diseases, if possible;
- 2dly. To evacuate the serous fluid already collected; and,
- 3dly. To restore the tone of the system, and strengthen the general habit.

In dropsical cases we should always carefully investigate whether

the disease is an original one, or prevails as a symptom of some other; for, by removing the cause, we shall often be enabled to perform a cure. For instance, if it has arisen as the consequence of intemperance, a free use of spirituous liquors, exposure to a moist atmosphere, or the having had recourse to large evacuations, particularly by bleeding, these ought carefully to be avoided in future; or if it has proceeded from long-continued intermittents, obstructions in the abdominal or thoracic viscera, and the like, these should be obviated, if possible.

In the treatment of anasarca swellings arising from the pressure of a tumour on some large lymphatic, the only thing that can be done is to remove it. When weakness of a limb, in consequence of a sprain or some contusion, has given rise to these swellings, the best method of cure will be to support the weakened parts, either with a laced stocking or a flannel roller, to prevent their yielding to distension, till, in the course of time, and by the effects of cold bathing and moderate frictions, they recover their natural tone.

When œdematous swellings come on in consequence of any of the lymphatic vessels of a limb being cut, as sometimes happens in extirpating indurated glands from the axilla, small punctures made in the under part of the limb will afford immediate relief.

The treatment of the diseases on which dropsy may depend has already been pointed out in various parts of this treatise, each under its distinct head; but, unfortunately, it may, and does sometimes, depend on diseases which are incurable, such as ossification of the valves of the heart and great vessels, scirrhus of the liver, spleen, &c. In such cases, medicine will avail but little.

To answer the second indication, of evacuating the serous fluid already collected, we must either have recourse to openings made immediately into the cellular membrane, or we must endeavour to excite certain serous excretions.

The openings most frequently used in anasarca are either slight scarifications or small punctures. In having recourse to these, we should, however, take care to avoid them in parts that are dependent, and they should be made so superficial as to extend to no greater depth than the cellular membrane, as deep incisions in dropsical parts are very apt to become gangrenous. *Aeupuncturation* has been recommended by some practitioners as a preferable mode of attempting to evacuate the collected fluid. To promote a discharge of the water by the several orifices, the parts may be bathed three or four times a-day with some kind of warm emollient fomentation.* In instances of sloughing sores consequent

* *R.* Fol. *Malvæ*,
Flor. *Anthemidis*, āā $\frac{1}{2}$ ss.

Aq. Fontan. Oiv. Paulisper coque, et cola pro fotu.

* Take Marshmallow Leaves,
Camomile Flowers, of each one
ounce and a half.
Pure Water, two quarts. Boil
them slowly for some time; then strain
off the liquor and use it for fomentation.

upon the rupture of the skin either by punctures or scarifications, much benefit has been derived from the application of a cloth moistened with spirits of turpentine over them.

With the like intention of drawing off the water from anasaruous limbs, blisters have sometimes been applied; they should be resorted to with great circumspection and caution.

An excitement of the different excretions is the other mode which has been proposed for carrying off the fluid diffused throughout the cellular membrane. This is to be done by emetics, purgatives, diaphoretics, and diuretics; all of which, by their evacuating effects, tend to increase the power of the absorbents.

Emetics* have been much administered in dropsical cases, under the supposition that they greatly promote absorption; and in many instances they have certainly been attended with a very good effect.

To employ them, however, with advantage, we ought to repeat them frequently. If they are found to weaken the patient, without procuring any mitigation of the disorder, we should then desist from using them. An emetic of the cupri sulphas, as advised under the head of Phthisis, or below †, appears to be the most proper, as having less tendency to exhaust than any other used in common.

Purgatives are likewise much employed in dropsical cases, with the view of carrying off a portion of the water by stool, and of exciting absorption; and as the stimulus of those which are of a drastic nature ‡ is most readily communicated to the system, so these are more generally used than those of a mild kind. The potassæ bitartras is, however, a purgative of this nature, which

* R₃ Oxymel. Scillæ, f. ʒvj.
Vin. Ipecac. f. ʒss. M.

ft. Haustus emeticus.

Vel,

R₃ Oxymel. Scillæ, f. ʒj.
Aq. Menth. f. ʒss.
Antimon. Tartarizat. gr. j.—ij. M.

ft. Haustus.

† R₃ Cupri Sulphat. gr. v. ad x.

Pulv. Ipecac. gr. v. M.

ft. Pulv. secundo vel tertio quoque mane sumendus.

‡ R₃ Scammon. gr. xij.
Hydrarg. Submur. gr. v.
Pulv. Zingib. gr. vj. M.

ft. Pulvis pro dos.

Vel,

R₃ Pulv. Jalapæ,
—— Scammon. āā gr. xij.
—— Cinnamon. Comp. gr. x. M.

ft. Pulvis.

* Take Oxymel of Squill, six drachms.
Wine of Ipecacuanha, half an ounce.

Mix them for an emetic draught.

Or,

Take Oxymel of Squill, one ounce.
Mint Water, half an ounce.
Tartarized Antimony, from one to two grains.

Mix them.

† Take Sulphate of Copper, from five to ten grains.

Powder of Ipecacuanha, five grains.

Mix them, and let this powder be taken every second or third morning.

‡ Take Scammony, twelve grains.

Calomel, five grains.

Powdered Ginger, six grains.

Mix them for a dose.

Or,

Take Powdered Jalap,
—— Scammony, of each
twelve grains.

Compound Powder of Cinnamon,
ten grains.

Mix them.

has been given with considerable success, but it is more usual to combine it with some of the drasties, such as jalap, elaterium, scammony, and gamboge*, than to give it alone. Evacuants, particularly of the drastic kind, are, however, only admissible and useful where the habit is indolent, and the dropsy extensive, without much local determination, or great debility.

To administer purgatives with the greatest advantage, they ought to be repeated at as short intervals as the patient can bear; for, when purging is not carried to the degree of quickly exciting absorption, the evacuation weakens the system, and thereby increases the afflux of fluids to the hydropic parts.

Diaphoretics are another class of medicines which have been employed in dropsy. In a few instances sweating may, perhaps, have produced a good effect; but in general it proves inefficacious, and only tends to add to general debility. On this account diaphoretics are not much used in dropsical cases, particularly where there is great weakness and general relaxation of the system. Should the practitioner wish to make a trial of them, under the failure of other remedies, he can administer them as here advised†, directing the patient at the same time to be laid between blankets, with a shirt and trowsers of flannel next to his skin, and to drink

Vel,
℞ Gum. Gambog. gr. iij. Terito bene
eum
Tinet. Sennæ Comp. f. ℥ss. et adde
——— Jalapæ, f. ʒij.
Syrup. Zingib. f. ʒiij. M.
ft. Haustus.

Vel,
℞ Extract. Elaterii, gr. j. ad ij.
Pulv. Zingib. gr. vj.
Ol. Junip. ℥iij.
Syrup. Simp. q. s. M.
ft. Bolus, aut in pilulas iij. divid. pro dos.

* ℞ Potassæ Bitart. ʒiij.
Gambog. gr. ij.
Pulv. Nuc. Moch. gr. x. M.
ft. Pulvis.

Vel,
℞ Pulv. Elaterii, gr. i.—ij.
Potassæ Bitart. ʒj.
Pulv. Cinnam. C. gr. v. M.

ft. Pulvis, pro dos. sumendus.

† ℞ Camphoræ, gr. v.
Pulv. Antimonial. gr. ij.
Confect. Aromat. g. x. M.
ft. Bolus, horâ decubitûs sumendus.

Or,
Take Gamboge, three grains. Dissolve
it in
Compound Tincture of Senna,
half an ounce; and add
Tincture of Jalap, two drachms.
Syrup of Ginger, three drachms.
Mix them for a draught.

Or,
Take Extract of Wild Cucumber, from
one grain to two.
Ginger in powder, six grains.
Oil of Juniper, five drops.
Syrup, a sufficiency to form a
bolus, or divide the mass into three pills
for a dose.

* Take Bitartrate of Potass, three drachms.
Gamboge, two grains.
Powdered Nutmeg, ten grains.
Mix them.

Or,
Take Powder of Wild Cucumber, from
one to two grains.
Bitartrate of Potass, one drachm.
Compound Powder of Cinnamon,
five grains.
Mix them for a dose.

† Take Camphor, five grains.
Antimonial Powder, two grains.
Aromatic Confection, ten grains.
Make them into a bolus, to be taken at
bed-time.

plentifully of tepid liquors, of which none probably may be more proper than mustard-whey.

Another method of producing a diaphoresis, and of thereby increasing absorption from the cellular membrane, is by warm air, or by warm steam. If the swelled legs of a dropsical patient are enclosed in a box, the air of which is made warm by a lamp or two, a copious sweat is soon produced by the increased action of the capillary glands, which is seen to stand on the skin, as it cannot readily exhale in so small a quantity of air, which is only changed so fast as may be necessary to permit the lamps to burn. At the same time, the lymphatics of the cellular membrane are stimulated by the heat into greater action, as appears by the speedy reduction of the tumid legs.

Possibly it might be well worth trying an experiment upon a person labouring under a general anasarea, by putting him into a room filled with air heated to about 120 degrees, which would probably excite a copious general diaphoresis, and a universal cellular absorption, both from the lungs and every other part. That air of so great heat may be borne for many minutes without much inconvenience, has been demonstrated by the experiments made in heated rooms by Dr. Fordyce.

Another experiment of using warmth in anasarea and other diseases, might be by immersing the patient in warm air, or in warm steam, received into an oil-skin bag, or bathing-tub, of tin, so managed that the current of warm air or steam should pass round and over the whole of the body, except the head, which might not be exposed to it; and thus the absorbents of the lungs might be induced to act more powerfully by sympathy with the skin, and not by the stimulus of heat.*

By employing stimulants, we sometimes are able to increase the action of the absorbent vessels, and thereby occasion watery fluids to be absorbed from their cavities. As such, mercury has sometimes been made use of; but it is apt to leave a great degree of weakness behind it, and to prove thereby highly prejudicial. If mercury will cure the disease on which dropsy depends, then it will be a proper remedy, but not otherwise.

The parts affected with dropsy have been stimulated by rubbing

<i>Vel,</i>	<i>Or,</i>
℞ Liquor. Ammon. Acetat. f. ℥ss.	Take Solution of Acetate of Ammonia,
Aqua Puræ, f. ℥j.	half an ounce.
Vin. Antimon. Tartariz. ℥xxiv.	Pure Water, one ounce.
Spirit Ammon. Aromat. ℥xv.	Wine of Tartarized Antimony
Syrup. Zingib. ʒij. M.	twenty-four drops.
ft. Haustus.	Aromatic Spirit of Ammonia, fif-
	teen drops.
	Syrup of Ginger, two drachms.
	Mix them as a draught.

* This and the former experiment have been proposed by the late Dr. Darwin. See vol. ii. of his *Zoonomia*, article iv. Sorbentia.

them very well every morning and evening with warm dry flannels; and the practice is certainly productive of a very good effect. Ammoniated liniment, and such other stimulating applications, can only prove useful in partial dropsies.

To remove swellings of the legs proceeding from a deficient action of the absorbents of the lower extremities, a warm saline pediluvium has often been used with success. The quantity of sea-salt should be about one-thirtieth part of the water, which, with about one-eightieth part of the sulphate of magnesia, or bitter earthy salt, constitutes the medium strength of the sea-water round this island. In such a pediluvium, the legs should be immersed for half an hour every night for a fortnight, at the heat of about 96 or 98 degrees.

Dr. Reid, in his *Treatise on Sea-bathing*, recommends a universal warm bath of sea-water in œdematous swellings, and apparently has employed it with success. He advises friction at the same time to be diligently used in the bath on the tumid limbs, taking care always to rub them from their extremities towards the trunk of the body, and not in the contrary direction, as in this way the progress of the fluids in the absorbent system must be most facilitated, though these vessels are furnished with valves to prevent its return. In a warm bath of sea-water the stimulus of the salt is added to that of the heat.

The evacuation which will be attended with the least danger of inducing debility, and at the same time with the best effect, is the excretion by the kidneys; and it is on this account that diuretics are more generally employed in all cases of dropsy, than any other class of medicines. Even these often fail, however; but not unfrequently, we may presume, from their use being discontinued too soon.

Of the class of diuretics, none seems to be more active than the digitalis. Its power of increasing the discharge from the kidneys, and of succeeding in effecting a cure of dropsical affections, in consequence of the increased evacuation produced by it, has of late been clearly ascertained in a great variety of instances. On account of its acting powerfully on the nervous system, destroying its mobility, and weakening the vital powers by repressing arterial action, it has, however, by some practitioners, been thought an improper remedy in dropsy; but even large doses of it have been given in this disease without any of those uncontrollable and dangerous effects which are said to deter many from its use, being observed to ensue.

It is a circumstance of curious and interesting moment, not perhaps, very generally known, that a relaxed, weakened, and depressed state of the system is the most favourable for displaying the full effects of digitalis. Dr. Withering* had early pointed out

* See his *Essay on Digitalis*, p. 189.

the fact, that in persons of tense fibres and great natural strength, labouring under ascites or anasarea, the digitalis seldom succeeded; and that, on the contrary, where the pulse was found feeble, or intermitting, the anasarous limbs and body soft and yielding, the countenance pale, and the skin cold, the diuretic powers of the plant were more conspicuous.

We are informed by Dr. Maclean* that these observations fully accord with those which he made; and he adds, that it seldom succeeds in those of a fat, corpulent habit, with a dull, sluggish fibre, while it speedily relieves those of a weak, delicate, irritable constitution, with a thin, soft, smooth skin, which in the anasarous limb is transparent.

When the urine is not serous, I have perceived that digitalis usually fails of success; on the contrary, I have found it to succeed where the habit was not entirely depraved, or the substance of the viscera not affected. When the organs of digestion fail, and there is frequent sickness or diarrhœa, and the bad habit of body is more remarkable than the extent or seat of the dropsy, its use has appeared to be injurious.

It may not here be unworthy of notice, that where the foxglove is given in such doses as to excite nausea, or to produce an evident narcotic effect, it does not then operate as a diuretic. During a long use of it, its narcotic effect seems to preclude its action as a diuretic. A diarrhœa supervening on the use of this remedy is likewise found to stop its diuretic effect.

If the digitalis does not answer within the first fortnight, the best way will be to change it for some other diuretic; as it not unfrequently happens, that where we have failed with one remedy of this class, we shall be successful with a second or a third. No class of medicines is so uncertain in their effect as this; and it will often occur that a diuretic of very inferior expectation will procure the effect we wish, after a failure of those which rank highest in power.

In employing the foxglove in dropsy, we may give it either in infusion† or saturated tincture, as mentioned under the head of Phthisis; or we may give it in substance, washing it down with a tea-eupful of any diuretic infusion.

The potassæ bitartras is another diuretic which is often employed in dropsical affections with a very happy effect. As possessing no deleterious qualities, and being easily managed by prac-

* See his Inquiry into the Nature, &c. of Hydro-thorax, p. 251.

† ℞ Infus. Digital. Purp. ʒvj.

Tinct. Card. Comp. ʒij.

Spirit. Æther. Nitr. ʒj. M.

ft. Haustus, bis terve in die sumendus.

† Take Infusion of Purple Foxglove, six drachms.

Compound Tincture of Cardamoms, two drachms.

Spirit of Nitric Æther, one drachm.

Mix them, and take this draught twice or thrice a day.

tioners of the smallest judgment, a preference over the digitalis has been given to it by some. Whether it possesses as great an anti-hydropic power, has not been satisfactorily ascertained. The experiments of Dr. Home* and Dr. Ferriar† seem to assure us that it does; but, from my own experience, I am induced to conclude that it does not.

In some cases, however, the potassæ bitartras diminishes the swellings very speedily. It produces an increase of urine, with watery stools; and for the most part lessens the patient's size more quickly than the increase of urine would lead us to expect. When it is likely to prove successful, it usually operates very early, producing, in general, an increased flow of urine within twenty-four hours; but its salutary effects have been known to have been delayed to the end of the third or fourth week. It is given in doses of from two drachms to one or two ounces a-day, as by habit it loses a great deal of its effect. When the quantity is considerable, it will be best to divide it into three or four doses, instead of taking it all at once, which few stomachs will bear. In conjunction with gamboge or elaterium, as before advised, it forms a powerful medicine, and, according to circumstances, may be made either to assist or take the lead of the digitalis.

From a junction of the potassæ bitartras with digitalis or squills‡, or both (see *Hydro-thorax*), interposing purgatives occasionally, very great advantages have been derived in some cases which have occurred in my practice. The bitartrate of potass given in combination with small doses of the extract of elaterium, is also a very valuable medicine in anasarca and other dropsical affections.

A total abstinence from drink has long been considered as highly necessary in all cases of dropsy; but in many instances this practice has been carried to a considerable degree without any advantage. It seems, however, to have fallen a good deal into discredit, as large quantities of watery liquors are often now allowed where diuretics, but more particularly the potassæ bitartras, are given. This mode

* Clinical Observations, Experiments, &c. p. 349.

† Medicinal Histories and Reflections.

‡ ℞ Potassæ Bitartrat. ʒij.
Pulv. Cinnam. Comp. gr. v.
— Digitalis, gr. j. M.
ft. Pulvis, bis terve in die sumendus.

Vel,
℞ Pulv. Digitalis, gr. ss—j.
— Scillæ, gr. j.
Potassæ Bitart. ʒij. M.
ft. Pulvis, ter in die adhibendus.

‡ Take Bitartrate of Potass, two drachms.
Compound Powder of Cinnamon,
five grains.
Powder of Foxglove, one grain.
Mix them. It may be taken twice or thrice
a-day.

Or,
Take Powder of Foxglove, from half a
grain to one grain.
— Squill, one grain.
Bitartrate of Potass, two drachms.
Mix them, and let this powder be given
thrice a-day.

of treatment seems, indeed, by far more proper than the former, as these medicines can hardly be carried in any quantity to the kidneys, without being accompanied with a large portion of fluid. When, upon a fair trial, the quantity of urine is not found to be increased by drinking water or other watery liquors*, their use may in that case be discontinued. Beer boiled with juniper berries is much used as a diuretic drink by the German physicians.

The different preparations of squill † have been employed very much in dropsical cases; but although this medicine has sometimes been attended with a good effect, still the advantages to be derived from it are by no means so certain as those we usually obtain from the digitalis or potassæ bitartras. A combination of squill and the chloride of mercury ‡ has been tried, but it has not been found to diminish the swellings in proportion to its diuretic effect.

The spiritus ætheris nitrici § is another diuretic, and may be

* R Rad. Armoraciæ Incis.
Sem. Sinap. C. āā ℥ss.

Aq. Bullient. Oj.
Infund. per horas xij. et adde Liquori colat.

Potassæ Acetat. ℥ij.
Spirit. Junip. Comp. ℥ij. M.

Bibat æger cyathum ter quaterve in die.

Vel,

R Decocti Genistæ Recent. ℥xij.

Potassæ Acetat. ℥ij.
Splrit. Armoraciæ Compos. f. ℥j. M.

Sumat cochl. larg. iij. ter quaterve in die.

† R Potassæ Acetat. ℥j.
Aq. Fœnicul. f. ℥j.
Acet. Scillæ, f. ℥j.
Spirit. Armoraciæ C. f. ℥ij.

Tinct. Digitalis, m̄xiiij. M.

ft. Haustus, ter in die adhibendus.

Vel,

R Pulv. Scillæ, gr. jss.

— Cinnam. Comp.
Potassæ Acetat. āā gr. viij.

Syrup. Zingib. q. s. M.
ft. Bolus, ter in die capiendus.

‡ R Pilul. Scillæ, gr. vj.
Hydrarg. Chloridi. gr. ss. M.
Fiant pilulæ duæ, nocte maneque capiendæ.

§ Decoet. Scoparii Recent. f. ℥jss.

* Take Horse-radish Root, sliced,
Mustard Seed, bruised, of each
half an ounce.

Boiling Water, one pint. Infuse
them for twelve hours, and to the strained
liquor add

Acetate of Potass, three drachms.
Compound Spirit of Juniper, two
ounces.

Mix them, and let the patient drink a wine-
glassful three or four times a day.

Or,

Take Decoction of Fresh Broom, twelve
twelve ounces.

Acetate of Potass, two drachms.
Compound Spirit of Horse-radish,
one ounce.

Mix them, and take three table-spoonsful
three or four times a-day.

† Take Acetate of Potass, one scruple.
Fennel Water, one ounce.
Vinegar of Squill, one drachm.
Compound Horse-radish Spirit,
two drachms.

Tincture of Foxglove, twenty
drops.

Make these as a draught, which may be
given three times a-day.

Or,

Take Powder of Squill, one grain and
a half.

Compound Powder of Cinnamon,
Acetate of Potass, of each eight
grains.

Syrup of Ginger, a sufficiency to
to form a bolus, which may be taken
three times throughout the day.

‡ Take Squill Pill, six grains.
Calomel, half a grain.

Make the mass into two pills, to be taken
night and morning.

§ Take Decoction of Green Broom, one
ounce and a half.

combined with other medicines of this class. The spiritus juniperi compositus in doses of one or two drachms, may be also recommended.

A decoction of green broom (*scoparium recens*), drank in large quantities, is also a diuretic of considerable powers, particularly in anasarca cases. It may, therefore, be used with the other remedies which have already been advised.

Bacher's pills* (which consist principally of hellebore) are among the diuretics often employed in dropsy. Whenever they produce a discharge of water, they diminish the swellings; but in cases of long standing they evidently weaken the patient, however cautiously given.

The tobacco tincture† is another remedy which has in some instances proved highly diuretic, when others have failed. Its use has been recommended by the late Dr. Fowler of Stafford. Various other medicines‡ are to be included in the list of diuretics which may be resorted to in cases of need.

Spirit. Junip. C. f. ʒij.

—— Æther. Nitrici, f. ʒj.

Oxymel. Scill. f. ʒij. M.
ft. Haustus, ter in die sumendus.

Vel,

℞ Digital. Purp. Sic. ʒij.

Aq. Bullient. Oss. Post horas duas
cola, et adde

Spirit. Ætheris Nitrici, f. ʒj.

—— Junip. C. ʒij. M.

Capiat cochl. larg. ij. 4tis horis.

* ℞ Extract. Helleb. Nigr.

Myrrh. āā ʒss.

Pulv. Card. Benedict. ʒjss.

Syrupi, q. s. M.

ft. Massa, in pilul. singul. gr. iv. distribuenda, quarum duasumat pro dos. 6tis horis.

† ℞ Tinct. Tabaci, ℥xv.

Spirit. Æther. Nitr. f. ʒij.

Oxymel. Scillæ, f. ʒj.

Aq. Pimentæ, f. ʒjss. M.

ft. Haustus, ter quaterve in die sumendus.

‡ ℞ Aq. Fœnicul. f. ʒj.

Tinct. Cantharid. ℥xv.

Spirit. Æther. Nitric. f. ʒj.

—— Junip. C. f. ʒij. M.

Compound Spirit of Juniper, two drachms.

Spirit of Nitric Æther, one drachm.

Oxymel of Squill, two drachms.

Mix them, and take this draught three times a-day.

Or,

Take Purple Foxglove Leaves, dried, two drachms.

Boiling Water, half a pint. Infuse them for two hours, then strain off the liquor, and add

Spirit of Nitric Æther, one ounce.

Compound Spirit of Juniper, two ounces.

Of this mixture the patient is to take two tablespoonfuls every four hours.

* Take Extract of Black Hellebore,

Myrrh, of each half an ounce,

Holy-thistle in powder, one drachm and a half.

Syrup, a sufficiency.

Form the mass into pills of about four grains each, of which take two for a dose every six hours.

† Take Tincture of Tobacco, fifteen drops. Spirit of Nitric Æther, two drachms.

Oxymel of Squill, one drachm.

Pimenta Water, one ounce and a half.

Mix them. This draught may be taken three or four times a-day.

‡ Take Fennel Water, one ounce.

Tincture of Spanish Fly, fifteen drops.

Spirit of Nitric Æther, one drachm.

Compound Spirit of Juniper, two drachms.

Cantharides will be likely to prove a useful and powerful remedy of this class, because they debilitate neither the general system, nor the parts upon which they immediately act. In the dropsical complaints of elderly people, with whom their stimulating power is not likely to be so active as with those who are young, they are particularly indicated.

Turpentine* is another stimulating diuretic which has been employed by some practitioners with much success, when other remedies of a milder nature have failed. If we give the oleum terbinthinæ, we had better begin with about ten drops, which dose may be repeated three or four times in a day. The quantity is to be gradually increased, according to the state of the patient, and the effect produced.

The third indication which has been proposed for the cure of anasarca is, to strengthen the system. When the disease is in its incipient state, and perfectly recent, we may often be able to arrest its progress, by employing, at an early period, proper means for effecting this purpose; but when it has been of long standing, we shall in general be obliged to wait until the water has been evacuated by the means which have been proposed.

The tonic remedies best adapted for strengthening the system, have already been fully noticed under the head of Dyspepsia. These, therefore, when proper, must be had recourse to, together with moderate daily exercise, frictions every morning with warm flannels, and supporting the integuments of the lower extremities either by bandages or a laced stocking. If a preference be given to bandages, great care should be taken in applying them not to make a greater compression on the upper part of the limb than on the lower.

In some cases of dropsy, but more particularly in those where

ft. Haustus, ter in die adhibendus.

Vel,
℞ Mass. Pilul. Scillæ, ʒj.
Sapon. Venet.
Gum. Ammon. āā, ʒij.

Ol. Junip. ℥xv.
Syrup. q. s. M.
Fiant pilul. xij. e sing. draehma, quarum
iv. sumat ter in die, superbib. cyath.
Decoeta Genistæ Recentis.

* ℞ Pulv. Sem. Sinap. ʒj.

Olei Terebinth. ℥x. ad xxx.

Syrup. Simpl. q. s. M.
ft. Bolus, ter quaterve die sumendus cum
cyatho Decoeti Genistæ.

Mix them as a draught, which may be taken thrice a-day.

Or,
Take Squill Pill, one draehm.
Hard Soap,
Gum Ammoniac, of each two
draehms.
Oil of Juniper, fifteen drops.
Syrup, a sufficiency to form the
mass. Let twelve pills be made out of
each draehm weight, of which four may
be taken thrice a-day, washing them
down with a wine-glassful of a Decoction
of Green Broom.

* Take Powder of Mustard Seed, one
scruple.

Oil of Turpentine, from ten to
thirty drops.

Syrup, a sufficiency to form a
bolus, which may be taken three or four
times a-day, washing it down with a tea-
cupful of a Decoction of Broom.

general debility has occasioned the disease, it may be proper to join diuretics to tonics, as in the manner here advised *; and this plan we may adopt from the commencement of the disease, keeping the body open at the same time with some gentle aperient.

It not unfrequently happens that an erysipelatous inflammation, which shows a tendency to gangrene, arises on anasarcaous legs. Linen rags, moistened in a strong solution of the acetate of lead in water, in the proportion of two drachms of the former to half a

* R Infus. Gentian. C. f. ʒj.

Tinct. Cort. Cinchon. f. ʒij.

Tinct. Cantharid. ℥xv.

Potassæ Acet. gr. x. M.
ft. Haustus, ter die sumendus.

Vel,

R Pulv. Myrrh. ʒss. Solve in

Spirit. Junip. C. f. ʒij. et adde

Aq. Pimentæ, f. ʒjss.

Tinct. Digital. Purp. ℥xx M.

ft. Haustus.

Vel,

R Infus. Cort. Cuspariæ, f. ʒjss.

Tinct. Calumb. f. ʒij.

Potassæ Acetat. ʒj.

Spirit. Armorac. C. f. ʒj. M.

ft. Haustus.

Vel,

R Infus. Digitalis, f. ʒvj.

Tinct. Card. C.

—— Cascaril. āā f. ʒjss. M.

ft. Haustus, ter in die capiendus.

Vel,

R Pulv. Cinnam. C. gr. x.

—— Gentian. gr. xv.

—— Digital. gr. j. M.

ft. Pulv. mane, horâ merid. vespereque
sumendus.

Vel,

R Pulv. Calumb. gr. xv.

—— Zingib. gr. x.

—— Scillæ, gr. j.

Potassæ Supertart. ʒj. M.

ft. Pulv. ter in die capiendus.

* Take Compound Infusion of Gentian,
one ounce.

Tincture of Peruvian Bark, two
drachms.

Tincture of Spanish Fly, fifteen
drops.

Acetate of Potass, ten grains.

Mix them. This draught may be taken
three times a-day.

Or,

Take Myrrh, half a drachm.

Dissolve it in

Compound Spirit of Juniper, two
drachms, and add

Pimenta Water, one ounce and a
half.

Tincture of Foxglove, twenty
drops.

Mix them.

Or,

Take Infusion of Angustura Bark, one
ounce and a half.

Tincture of Calumba, two
drachms.

Acetate of Potass, one scruple.

Compound Spirit of Horse-radish,
one drachm.

Mix them as a draught.

Or,

Take Infusion of Foxglove, six drachms.
Compound Tincture of Carda-

moms,

Tincture of Cascarilla, of each one
drachm and a half.

Mix them as a draught, to be taken three
times a-day.

Or,

Take Compound Powder of Cinnamon,
ten grains.

Powder of Gentian, fifteen grains.

—— Foxglove, one grain.

Mix them. This powder may be taken
every morning, noon, and evening.

Or,

Take Powder of Calumba, fifteen grains.

—— Ginger, ten grains.

—— Squill, one grain.

—— Supertartrate of Potass,
one drachm.

Mix them. This powder is to be taken
thrice a-day.

pint of the latter, will be a good application in all such cases, even in preference to the cinchona bark, in the form either of fomentations or poultices. In the inflammatory affection of the lower extremities accompanying anasarca, Dr. Ferriar found much advantage from an infusion of digitalis used as a lotion.

When the effusion of serum arises in the lower extremities from some local obstruction, frictions and bandages may prove useful, but in that more numerous class of cases, in which dropsy of the cellular membrane is associated with a disposition to effusion in the serous membranes of the abdomen or thorax, they can afford no relief.

The diet in all anasarcaous cases ought to be light and nourishing, consisting chiefly of meats which are of easy digestion, and pungent aromatic vegetables, as garlic, mustard, onions, cresses, horse-radish, shalot, &c. For common drink, the patient may use any of the diuretic infusions before recommended. If wine is wished for, Rhenish will be most proper. If he lives in a damp situation, he ought to be removed into a dry one, and, if possible, into a warmer climate.

ASCITES, OR DROPSY OF THE BELLY.

ASCITES is marked by a tense swelling of the abdomen, accompanied by an evident fluctuation.

The water is usually collected in the sac of the peritonæum, or general cavity of the abdomen; but sometimes it is found entirely without the peritonæum, and between this and the abdominal muscles. Collections of water, in some instances, begin by sacs formed upon and connected with one or other of the viscera, as happens frequently in the ovaria of women, as also on the surface of the liver.—(See *Hepatitis*.) These form that disease which has been termed encysted dropsy.—(See *Hydrops Ovarii* and *Hydatids*.)

In addition to the causes which have been enumerated as productive of anasarca, certain local affections, as diseases of the viscera of the abdomen, scirrhusities of the liver, spleen, or pancreas, enlargement of the mesenteric glands, structural diseases of the heart, local injury, &c., do sometimes occasion ascites.

Ascites may occur in either sex, and at any age; but, like the other forms of dropsy, it is chiefly to be met with in persons advanced in life. It is often preceded by a loss of appetite, sluggishness, inactivity, dryness of the skin, oppression at the chest, cough, diminution of the natural discharges of urine, and costiveness. Shortly after the appearance of these symptoms, a protuberance is perceived in the hypogastrium, which extends gradually, and keeps on increasing, until the whole abdomen becomes at length uniformly swelled and tense.

The distention and sense of weight, although considerable, vary somewhat according to the posture of the body, the weight being felt the most in that side on which the patient lies, while at the same time the distention becomes somewhat less on the opposite one. In general, the practitioner may be sensible of the fluctuation of the water, by applying his left hand on one side of the abdomen, and then striking on the other with his right. In a few cases it will be obvious to the ear.

As the collection of water becomes more considerable, amounting in some cases to eighty or a hundred pints, the difficulty of breathing is much increased, the countenance exhibits a pale or bloated appearance, and an immoderate thirst arises, the skin is dry and parched, and the urine is very scanty, thick, high-coloured, and deposits a lateritious sediment; the functions of the stomach and bowels are in most cases performed with tolerable regularity. In general dropsy, the urine coagulates like the diluted serum of the blood, whilst in that which proceeds from unsound viscera, it is usually high-coloured, scanty, and, on cooling, deposits a pink-coloured sediment. With respect to the pulse, it is variable, being sometimes considerably quickened, and at other times slower than natural. Although ascites is sometimes accompanied by feverish disposition, still it is frequently absent. It has, however, been observed, that during ascites the derangement in the general system is greater than in other species of dropsy.

The principal difficulty which prevails in ascites, is the being able to distinguish with certainty when the water is in the cavity of the abdomen, or when it is in the different states of encysted dropsy. To form a just judgment, we should attend to the following circumstances:—

When the preceding symptoms give suspicion of a general hydropic diathesis; when at the same time some degree of dropsy appears in other parts of the body; and when, from its first appearance, the swelling has been equally diffused over the whole belly, we may generally presume that the water is in the cavity of the abdomen. But when the swelling has not been preceded by any remarkable cachectic state of the system, and when, at its beginning, the tumour and tension had appeared in one part of the belly more than another, there is reason to suspect an encysted dropsy. Even when the tension and tumour of the belly have become general, yet, if the system or body in general appear to be little affected; if the patient's strength be not much impaired; if the appetite continue pretty entire, and the natural sleep be little interrupted; if the menses in females continue to flow as usual; if there be yet no anasarca, or, though it may have already taken place, if it be still confined to the lower extremities, and there be no leucophlegmatic paleness or sallow colour in the countenance; if there be no fever, nor so much thirst or scarcity of urine as occur in a more general affection; then, according as more of these

different circumstances take place, there will be the stronger grounds for supposing the disease to be of the encysted kind.*

By carefully attending to the symptoms of pregnancy, and which are enumerated under that head, we cannot fail to distinguish it readily from every species of dropsy.

Ascites is always to be considered as of very difficult cure, let the cause have been what it may. The urine being little diminished, or becoming more copious; the swelling of the abdomen subsiding, the skin ceasing to be dry, the strength originally little impaired, and the respiration becoming free, may be regarded in a favourable light: on the contrary, intense local pain, great emaciation, sympathetic fever, the disorder having been induced by structural diseases of the heart, or a diseased state of the liver, or other abdominal viscera, are to be looked upon as very unfavourable circumstances. Dropsy of the encysted kind generally terminates, sooner or later, in the destruction of the patient.

The usual appearances to be observed in dissections of those who have died of ascites, are as follow:—We observe a large quantity of fluid effused in the cavity of the abdomen, which for the most part is serous, but it now and then presents material differences both in colour and consistence, and we frequently notice flakes of coagulable lymph floating in it. In some cases, the water, instead of being collected in the general cavity of the abdomen in one large body, is lodged in distinct small cysts, forming what are called hydatids. Besides the accumulation of water in the abdomen, we often find the liver swelled, hard, tuberculated or gorged with blood; the spleen, pancreas, and mesenteric glands considerably enlarged; the stomach occasionally scirrhus, and the peritonæum, either generally or in patches, inflamed, thickened, studded with white elevated points, and sometimes in a state approaching very nearly to gangrene. Polypi are not unfrequently observed in the large blood-vessels, as also ossifications in various parts of these organs. A diseased state of the heart is occasionally met with.

In the treatment of ascites we are to attend to the two following indications:—

1st, To evacuate the accumulated fluid; and,

2dly, To prevent any fresh collection.

To answer the first of these intentions, it has been customary to have recourse to purgatives of a drastic nature, or to diuretics, with the occasional use of emetics, in the same manner as has been fully noticed under the head of Anasarca; and to which I must beg leave to refer the reader, in order to save the trouble of recapitulation.

A singular method which has been recommended for procuring

* These remarks are taken from Dr. Cullen's First Lines of the Practice of Physic, as conveying a clear idea of the distinguishing signs between ascites and encysted dropsy.

a discharge by urine in ascites, is by long-continued gentle friction of the abdomen with the fingers dipped in oil, which operation is to be repeated daily. The only effect to be derived from the oil appears to be that of preventing an excoriation of the skin.

We should give a fair trial to the above remedies, with the view of increasing the natural secretions, and particularly to diuretics; (see *Anasarca* for various forms of this class of medicines); and where any particular one of this class does not promote an increased flow of urine, we ought to make trial of another.

If all means fail, and the pressure and tension of the abdomen become insupportable, or if we have reason to suspect the pressure of the water upon the kidneys prevents the diuretics from having a due effect on them, we must then resort to tapping. This mode of evacuating the water is undoubtedly the most ready, but it has no disposition to eradicate the disease. The operation is considered by some as not being likely to be attended with injurious consequences, and is, by a few practitioners, advised as the first step to be pursued where there is inordinate extension; but as erysipelatous inflammation, terminating in gangrene, has not unfrequently arisen in the wound, it would seem best to make trial of other means before we have recourse to it. In drawing off the water, a proper degree of pressure should be made on the abdomen by means of a broad bandage, and this ought to be kept up for some time.

By giving a smart purgative of elaterium, combined with the bitartrate of potass (see *Anasarca*), the day after the performance of the operation, when there is no great debility present, and repeating it two or three times, with an interval of a few days between each dose, I have, in a few instances, prevented any fresh accumulation of the water and in a great many very much retarded it.

The re-accumulation is sometimes obviated by removing the causes which induced the disease, and by strengthening the tone of the parts in particular, and of the system in general. For instance, if the disease proceed from chronic visceral obstruction, its effects may be combated by mercurial friction over the abdomen, and an occasional drastic purgative, a scruple or half a drachm of the unguentum hydrargyri fort. being rubbed over the belly until the mouth is slightly affected, and one or two grains of elaterium being administered once or twice a-week. Where the disease arises in a weak delicate habit from debility, tonics, aromatics, and stimulants, combined with diuretics, as directed for *Anasarca*, together with a nutritive diet, moderate exercise, and pure air, will be the most appropriate means to adopt.

HYDROPS OVARII, OR OVARIAN DROPSY.

THE ovary is very frequently converted into one or more cysts or capsules, of variable size, thickness, and contents. Sometimes, one large cyst fills nearly the whole abdomen; in other instances, instead of a single bag, the ovary is converted into a congeries of cysts, either separate or communicating with each other by considerable openings. Both varieties may contain mere aqueous fluid, or one of such consistence as scarcely to admit of being drawn off by tapping. Hair, teeth, and other tegumentary appendages, bones, calcareous concretions, &c. have been formed in these cysts.

Both ovaries are seldom diseased in the same subject; and, of the two, the left more commonly suffers.

Nothing satisfactory can be offered respecting the causes of this disease, as women of every condition and age are found to be afflicted with it.

Ovarian dropsy is to be distinguished from ascites by attending to the symptoms which have already been enumerated under the head of that disease. In ovarian disease the swelling generally commences on one side of the lower part of the abdomen, and only gradually passes over the middle line in its progress, and is often attended with some local hardness and irregularity of the surface of the tumour. It frequently occurs that no derangement of the health accompanies this disease at the commencement, but generally there is faulty menstruation. Ascites rarely exists without evident disease of one or more of the organs of the chest or abdomen. Great caution must be observed in distinguishing this disease from pregnancy, for the consequences of such a mistake might be most serious. The history of the case, added to the previous remarks, will usually suffice, but should there be any doubt, no operation should be proposed till a careful examination of the tumour by means of the ear has been made.

The treatment of this disease has hitherto been most unsatisfactory, for medicine can do but little to control so evident an organic alteration; however, a careful and assiduous attention to the general health—supporting the patient by a good and liberal diet, and regulating the secretions by the occasional exhibition of aperients, will do much in checking the rapid destruction of the cysts; but should the disease advance in spite of this treatment, recourse must be had to tapping the tumour. This, however, should be postponed until symptoms of an urgent nature demand such interference, as (independently of the danger of operation) it is a serious matter from the probability of its soon becoming necessary to repeat the operation, after once having performed it. And each time the fluid is removed, a very great drain is made on the blood, and the patient necessarily suffers from this exhausting process.

Several modes of operating for the radical cure of this disease

have been proposed and carried into effect; a large opening has been made into the belly, the band introduced, and (no adhesions interfering) the whole mass has been excised. On the vascularity precluding the removal by means of the knife, a ligature has been first placed on the neck of the tumour, and the vessels being thus secured, the operation has been completed as above. So serious is this formidable proceeding, and so many obstacles have been found to prevent its completion, that a new operation has lately been suggested by Mr. Brown of St. Mary's Hospital, and put into practice in two or three instances with success. This consists in freely opening the abdomen and laying bare the ovarian tumour; its peritoneal covering is then partially reflected, and its contents emptied, care being taken to prevent the relapse of the tumour into the abdomen. A large piece of the cyst is then excised, avoiding any large vessels; the empty cyst is then replaced, and the wound dressed by sutures and plasters. This operation is in imitation of spontaneous recovery arising sometimes from rupture of the cyst into the cavity of the belly: its integrity being destroyed, the fluid is absorbed by the living membrane of the abdomen, and the cyst gradually shrinks.

HYDROCELE.

THIS affection consists of a collection of watery fluid in the tunica vaginalis, the bag in which the testicle is placed, or in some part of the testicle itself, or spermatic cord. In the former instance it is only an increase of a natural secretion, by which the surface of the testicle is lubricated. It is generally characterized by the following symptoms:—a smooth, soft, elastic, and often transparent swelling commences in the inferior part of the scrotum, and gradually extends upwards, causing little inconvenience beyond its bulk and weight. The tumour is distinguished from a rupture by the presence of all or most of these symptoms, and by not increasing when the patient coughs, nor subsiding when he lies down.

This disease is rarely attended with any danger to life, but becomes, when large, a source of great annoyance by dragging down the spermatic cord, and its size materially interferes with the free movements of the body. In children the disease often spontaneously disappears; rarely, however, in adults.

Treatment.—Constitutional remedies have but little effect in curing this disease; it is therefore on surgical means that reliance is principally to be placed. In children, a few punctures of the tumour, by means of an ordinary needle, will often suffice to effect a cure; but in adults it is generally necessary to produce some inflammation of the secretive surfaces, and thus to destroy their function.

If the treatment proposed be only palliation, the fluid may be

drawn off by a trocar and canula; and as it only slowly returns, this may be repeated at intervals, as necessary; or a few punctures may be made with a needle in the front and lower part of the tumour, care being taken to avoid the testicle (which usually lies at the posterior aspect) and all large veins. By this means the tumour may be controlled with safety, and but little pain, by the patient himself.

The radical cure is generally effected by injecting a stimulating fluid* into the cavity of the hydrocele, having previously drawn off its contents by means of a trocar and canula: this is allowed to remain till it produces considerable pain, in order to establish inflammation; it may then be partially or entirely withdrawn, and the patient must be kept quiet, the inflammation regulated by leeches, cold lotions, and mercury if necessary.

In some cases this will not effect a cure: it may then be necessary to introduce a seton, consisting of a few pieces of silk, and retain them till the requisite amount of inflammation has been produced. Should this plan fail, the tumour may be freely opened, when suppuration will ensue, and the wound gradually heal, obliterating the cyst.

HYDATIDS.

By this disease is understood the presence of one or more peculiar parasitic animals in some part of the body.

Hydatids consist of vesicles, often of extreme tenuity, having in their interior a transparent thin fluid. No less than three varieties infest the human race—the *Cysticercus*, the *Echinococcus*, and the *Acephalocystis*. Their size varies from that of a small shot to that of a child's head. They possess the power of locomotion, and are consequently free and unattached, and rapidly multiply by generation within the original cyst. They are found in the cavities of the body, in the cellular tissue between muscles, and in the solid organs; their commonest situations being probably the liver, ovaries, uterus, brain, kidneys, and lungs; but they also occur in the bones and muscles, &c. The symptoms of their presence are peculiarly vague; and as they seldom produce other effects than pressure on important parts, their real nature is often long unknown, till, perhaps, by accidental means, they die or give rise to abscess and ulceration, or, making their way to one of the outlets of the body, escape, and thus apprise us of their existence. When superficially placed, a peculiar vibratile movement may be perceived in them occasionally by placing the cold band on the

* For Injections — Lime-water, or
Sulphate of Zinc, $\zeta j.$ and Water, $Oj.$, or
Tincture of Iodine, $\mathfrak{m}xxx.$ and Water, $\zeta iij.$

tumour. Their mode of origin is very obscure, for they generally appear without any assignable cause.

They may remain for a long period quiet, and but slowly increase, and so not give rise to any serious consequences; but should their real nature become known by the above means, or by puncture with a grooved needle, and other circumstances permit, they may be evacuated by a free opening with a bistoury, care being taken to insure their complete extermination.

ACUTE HYDROCEPHALUS, OR WATER IN THE HEAD.

PYREXIA, violent and continued pain in the head, suffused redness of the eyes, great sensibility and aversion to light, suddenly interrupted sleep, with screaming, vomiting, and obstinate costiveness, the pulse at first preternaturally quick, afterwards becoming inordinately slow, and convulsions, are the pathognomonic symptoms of this disease. There is an especial necessity for studying the premonitory symptoms and those which belong to the first manifestation of this disease, since it is only at its commencement that we can cherish the hope that remedial measures can be of much avail.

The fact that a tendency to this disease may be inherited is generally admitted; and it has appeared to us that a predisposition to it is often indicated by the size and form of the head, which is somewhat larger in proportion to the body than in the majority of children, while the forehead is more full and prominent. Disturbed rest at night, with occasional sudden startings from sleep in alarm, and it may be with a scream, should always awaken suspicion of some active congestion of the brain, more especially when there is an absence of any evidences of gastric or intestinal disorder, where the appetite is good or even craving, the tongue clean or only slightly furred, the evacuations from the bowels healthy or nearly so, and no worms are present. If headache be complained of, this will tend to confirm the suspicion, though the pain in the head is frequently not urgent, and is by no means pathognomonic. That which occurs in congestion of the brain is, however, more constant or more constantly recurrent than that from other causes. Other occasional symptoms that strengthen our apprehension are a frequent knitting of the brows, an occasional deep-drawn sigh, and grinding of the teeth. Together with some or other of the above symptoms there is much listlessness, a disinclination for play, and the child, if it can run about, hangs its head as if it were heavy, and is found often resting it on a chair or on its mother's lap. And this condition may have a very variable duration, as of a few days, or of some weeks; and if it be protracted, there is also some wasting. There is besides some heat of skin, more espe-

cially about the head, and rapidity of pulse. If the disease have gone no farther than this it will generally admit of cure by appropriate remedies; indeed, we will not affirm that if neglected it would invariably pass into the form of acute hydrocephalus, but we think that there is great danger of its doing so.

Many authors refer the occurrence of hydrocephalus to previous disorder of the digestive organs; and according to their view the symptoms of such disorders are its precursors. To us it appears that the abdominal symptoms often observed at the outset of hydrocephalus, like the vomiting presently to be spoken of, are in the majority of instances not due to any disease of the intestines, but are secondary effects of the disturbance of the cerebral circulation. Thus we have several times known children to complain much of abdominal pain in whom we suspected the existence of disease of the brain; and we notice a case of Dr. West's (Lectures, p. 43.) in which an attack of violent pain in the abdomen was soon followed by convulsions, coma, and death occasioned, as appeared on dissection, by cerebral hæmorrhage. Again, Dr. Abercrombie (at p. 9. of his work on Diseases of the Brain) remarks, "The bowels are generally obstinate, but frequently they are natural; and I have seen the disease throughout its whole course attended by a spontaneous diarrhœa." Yet extreme neither of looseness nor constipation will be supposed to depend on a primary affection of the bowels themselves. To say that during congestion of the brain the bowels are very insensible of the ordinary effects of purgative medicines, would be to affirm a more general truth than to say that they are constipated under that state. The quotation just made shows that constipation is by no means invariably present; but we believe that in any case it is difficult to obtain increased evacuations except by very strong purgatives: and we well remember that, in a child four years of age, a diarrhœa which had resisted the use of some dark (probably astringent) powders, was checked with calomel and scammony, and finally cured by leeches behind the ears in addition to the continuance of these means. Here we had clear evidence of a threatening of cerebral disease; and the result of the treatment seems to show both that the diarrhœa was symptomatic, and that the bowels had a diminished susceptibility of the ordinary influence of purgatives. It is important to note that a symptomatic affection differs from a primary one as much in the manner of its treatment as in the nature of its origin.

The actual invasion of acute hydrocephalus is commonly marked in children under five or six years of age by the sudden occurrence of obstinate vomiting. Continued vomiting, especially if it have resisted the simple measures calculated to allay mere gastric irritation, should always, in the case of young children, direct attention to the possible existence of cerebral disease. "The persistence of vomiting," writes Dr. West (Lectures, p. 63.), "in any case which you had thought to be one merely of gastric disorder, must be looked upon by you with great suspicion, and this even though

the bowels have acted freely from medicine, and though there be no obvious indication of mischief in the head." Our own experience has led us to note a peculiarity of the vomiting due to cerebral disease, which we have not seen insisted upon by authors, namely, that it is thus far indiscriminating that the blandest food is as likely to be returned as the most nauseous medicine, while remedies which make a strong impression on the system, such as brisk aperient powders, have the best chance of being retained: there is, too, less of nausea and of retching than in primary affections of the stomach. These attacks of vomiting seldom occur more than two or three times a day; but they continue for several days (unless relieved by treatment), and seldom cease till more distinct symptoms of cerebral disease, as delirium or convulsions, have appeared. Then, too, the headach has become more severe, and the pyrexia more strongly marked, so that the child is confined to bed, where it lies on its back, with a flush upon the cheeks, not entirely motionless, for the hands are sometimes resting on the stomach, and sometimes raised on the pillow over its head, and the head is at times rolled from side to side; but there is no shifting of the place in bed, and the movements have nothing in them of the heedlessness of childhood, but are so carefully made as not to jar the brain. Authors describe a weak moaning or whining cry as characteristic of this state. Certain it is, that there is never any continuous screaming; and if the voice, under the influence of pain, be momentarily raised, the exclamation is hastily broken off. The sound of the child's own voice may well be painful to it under the state of exalted sensibility, which renders all noises and strong light distressing to it,—circumstances much insisted on as marking the approach and early stage of this disease. The pulse is, to the conclusion of this stage, rapid and feeble, sometimes intermitting, the skin hot, especially about the head, the abdomen fallen in from the absence of flatus. Convulsions may occur at night, when there is generally more active excitement than by day, or they may come on at other times, and at very uncertain periods, from the outset of the malady. The child, in the stage of which we have just spoken, may have its eyes half closed, and continue for considerable intervals quiet and inobservant of what goes on around; but drowsiness and stupor do not generally belong to the early stage of acute hydrocephalus: in this it differs from hydrocephaloid diseases. Strabismus, or squinting with one of the eyes, is a frequent accompaniment of the progress of the malady, and apt to come on towards the close of this stage; and soon we have the second stage, marked by drowsiness, passing into profound coma; and this may come on even where some relief or interruption of previous symptoms has taken place, and friends are hoping for further amendment to follow this at first tranquil sleep. Dr. West, however, warns us always to suspect the sleep which follows continued restlessness in hydrocephalus. And now the pulse is said to be generally slow, and subsequently to regain its rapidity, while

the child is totally unconscious, with pupils, it may be, turned upwards under the drooping upper eyelid, or even so far that when this is raised it is difficult to ascertain their condition. When this can be done they are for the most part dilated, and insensible to the strongest light. There is little interest in tracing out the picture in all its further details: we have already passed the bounds within which there is scope for medical skill or for parental hope. "Since the fatality of the disease," writes Dr. West, "is so invariable, it may seem superfluous to say anything more with reference to the prognosis; but I am desirous of guarding you against being deceived by delusive appearances of improvement, which are by no means unusual even in cases where the real nature of the disease has for some two or three days been clearly manifest." "Tubercular meningitis," says M. Guersent, as cited by this author, "may sometimes terminate by recovery in the first stage, though the nature of such cases is always more or less doubtful. In the second stage I have not seen one child recover out of a hundred; and even those who seemed to have recovered have either sunk afterwards under a return of the disease in its acute form, or have died of phthisis." Here we find, in the most recent and approved authors, a melancholy confirmation of Dr. Gölis's words, what Fiseher says is, and always will be, true. If this disease, fatal in most cases, is now and then subdued by art, it is only when it is detected in the first moments of its origin.

The progress of the disorder has by some been divided into three stages, which it may be worth while to describe again in more continuous order.

1. Its first stage is marked with many of the symptoms of pyrexia, such as languor, inactivity, loss of appetite, vomiting, hot, dry skin, flushing of the face, headach, throbbing of the temporal arteries, quickened pulse, aversion to light and sounds, and loss of rest; which symptoms always suffer an exacerbation in the evening, but towards morning become milder.

In these cases, the countenance of the child is strongly expressive of distress and suffering, its temper is irritable and fractious, it has a great propensity to bed and a recumbent position, has pains, with an aversion to being moved, and, as the disease advances, it rolls its head from side to side, or throws its arms over it. It often sighs, and its breathing is extremely irregular, particularly when asleep; the child droops, the body wastes. The urine has nothing remarkable in its appearance, but it is retained longer than usual; great costiveness prevails, and no stool is voided without the aid of purgatives, either given by the mouth, or thrown up as clysters; and in general the most powerful medicines of this class are requisite to produce the desired effect.

2. The disease at length makes a remarkable transition, denoting the commencement of the second stage. The child screams frequently, and without being able to assign any cause; its sleep is much disturbed; there is a considerable dilatation of the pupils

of the eyes, which do not contract on being exposed to light; the pulse becomes slow and unequal, and perhaps lethargic torpor or double vision ensues.

3. In the third stage, the pulse, before slow, becomes again quick, irregular, and intermitting, the pupils are permanently dilated, and cease to contract on the approach of light. The child falls into a state of stupor; the screaming fits occur more frequently, and there is a constant moaning; and coma, with squinting and convulsions, succeed. When the accumulation of water is very great, and the child young, the sutures recede a considerable way from each other, and the head, towards the end, becomes much enlarged.

We are not, however, to expect that these stages will follow each other, in all cases, in a regular and increased progress; for a child has sometimes appeared in health on the very night on which it was seized with convulsions, by which it was destroyed a few days afterwards.

The disease commonly terminates in three weeks from the date of the first symptom; but, in some instances, its termination is extended to four, five, or six weeks. Like every disease of the brain, its duration is, however, uncertain; for in some cases it has run its course in a few days.

Dr. West concludes, from a statistical review of numerous cases of his own and of other authors, that the disease usually runs its course in from two to three weeks after the appearance of well-marked symptoms. The most rapidly fatal case occurring under his own observation was fatal in five days. If the stage of premonitory symptoms be included, cases may last to seven or eight weeks. M. Piet gives three days as the shortest, and twenty as the longest, duration of acute symptoms.

Hydrocephalus is to be distinguished from apoplexy by its being attended with pyrexia, and from simple typhus by the paroxysms being very irregular, with perfect intermissions, many times in a day. Whatever difficulties there may be in the early stage, particularly in infants, there is no disease more easily distinguished in the advanced stages than hydrocephalus. Indeed, how can we mistake when we see a child rolling its head on the pillow, or perhaps sawing the air with one hand, while the opposite side is palsied; with a hectic flush on the cheek, his eyelids half concealing the pupil, and the eyes deprived of their vivacity by the filmy covering of the cornea; the complete dilatation of one or both pupils, and the suffusion of the adnata; drawing a long sigh; frequently grinding his teeth; quite incoherent, or in a state of complete insensibility; with a burning fever on the skin, or sweat forced from every pore: and all the symptoms alternating with, and at last finished by, palpitations, hurried breathing, and violent convulsions?*

* See Essay on Hydrocephalus Acutus, by J. Cheyne, M.D.

As regards the diagnosis between the first stage of this disease and gastric disorder, Dr. West remarks that the latter is not attended with much febrile disturbance; the face, though heavy, is not distressed or anxious, while the tongue is usually much more coated than at the onset of an attack of hydrocephalus. We believe, as we have already indicated above, that in uncomplicated cerebral affection the secretions deviate much less from their natural condition than in any disorders of the intestinal canal; that there is less aversion to food, and less thirst also.

Hydrocephalus is almost peculiar to young children—say from the third to the sixth year of life, being rarely known to extend beyond the age of twelve or fourteen; and it seems more frequently to arise in those of a serofulous and rickety habit than in others, or at least among those who have the peculiarities of skin, complexion, and features, which indicate serofula. It is an affection which has been observed to pervade families, affecting all or the greater part of the children at a certain period of their life; which seems to show that in some cases it depends more on the general habit than on any local affection or accidental cause.

Unquestionably, the disease has arisen in many cases without any assignable cause; but among its remote ones may be enumerated teething, injuries done to the head by blows and falls, suppressions of tinea capitis, or serofulous runnings behind the ears, previous diseases, such as measles and scarlatina, and exposure to cold. Dr. West's own experience of thirty-one fatal cases, the nature of which was verified by examination after death, gives the following as the numbers falling between different ages. In five of them the patients were under one year of age, in seven between one and three, in sixteen between three and six, and three only between six and nine; and he remarks, in a note, that the Registrar General's Third Report confirms the inference to be drawn from these observations as to the greatest number of cases falling between the third and sixth year.

M. Piet, in a monograph on this subject, states eleven months as the earliest, and fifteen years as the latest, age of the occurrence of the disease out of ninety examples. And he adds, without denying that it sometimes attacks the most robust, that nevertheless the greater number of patients observed by Messrs. Senn, Parent, Charpentier, Gherardet, and himself, have laboured under a chronic pulmonary or intestinal affection.

It was, we believe, to Drs. Rush and Cheyne that we mainly owe the first recognition of the essentially inflammatory nature of acute hydrocephalus; and of the fact that the effusion into the ventricles, viewed by their predecessors as the important character of the disease, is altogether a secondary phenomenon, and entitled to far less consideration than it had previously received. These views, with whomsoever they originated, have subsequently been so fully adopted, that the very name of hydrocephalus has been generally felt to be a misnomer, while many authors have retained it only

on account of the free currency which it has obtained. Some have not hesitated to substitute other and more appropriate titles for the disease which it was intended to designate. Thus M. Foville, (in the *Dictionnaire de Médecin et de Chirurgie Pratique*) treats of it under the head of Meningitis, and speaks of cerebral meningitis, piitis and acute hydrocephalus as synonymous terms. Regarding the intrinsic nature of the complaint, Dr. Abercrombie (*Diseases of the Brain*, 1828, p. 152.) thus expresses himself:—"The fair conclusion from these facts appears to be, that the prominent symptoms in these cases are not the result of the effusion, but of that disease of the brain of which the effusion is one of the terminations. From a variety of facts which have been adduced there seems little reason to doubt that this disease is of an inflammatory nature." M. Billard (*Diseases of Infants*; Stewart's translation, 1839, p. 479.) remarks, much to the same purport, that one of the most immediate effects of cerebral meningitis is the effusion of serosity in the ventricles; that many authors, attaching more importance to the symptom than to the cause producing it, have described this disease under the title of *Hydrocephalus acutus*; but that the works of MM. Brichteau, Senn, Gölis, and others have demonstrated very clearly the perfect coincidence existing between arachnitis and hydrocephalus. Drs. Evanson and Maunsell range acute hydrocephalus under inflammatory affections of the cerebral system; but in doing so they state their agreement with the words of Dr. Cheyne, that hydrocephalus consists in many "instances of a diseased action of a peculiar kind; but of what, we can as little explain as we can the nature of serofulous action." And this leads us to remark, that, while the inflammatory nature of the malady has been universally admitted, there have been, in the works which have appeared during many years past, grounds for, and evidences of, a suspicion that simple inflammation is not the only important element in its development. The words just quoted are very suggestive in reference to this point: and many years later we find Dr. Abercrombie pursuing the same train of thought. When speaking of the prognosis, he says, the more they (the symptoms) approach to the character of active inflammation, our prospect of cutting them short will be the greater; and the more they partake of the low serofulous inflammation it will be the less. M. Foville, in the article already referred to, mentions miliary granulations of a pearl colour as found on the surface of the arachnoid, most frequently along the course of the longitudinal sinus, on the surface of the ventricles, round the medulla oblongata, and the tuber annulare, among the more striking characters of chronic meningitis. It must be added, he continues, that in these cases the sub-arachnoid and ventricular serous fluid is increased in quantity. Dr. Hodgkin also has noted, in his lectures on the morbid anatomy of the serous membranes, that the arachnoid lining the ventricles is occasionally sprinkled with very minute and tolerably firm elevations, as if it had been sprinkled with a small

quantity of finely powdered glass; and he regards this appearance as an instance of what he terms scabrous inflammation. Both of these appearances are, however, most probably to be referred to that tubercular development which has of late been so often met with associated with acute hydrocephalus. Thus Dr. Alison writes (p. 343.) on this subject, that the serous effusion and all the marks of inflammation within the head are very frequently complicated with tubercular deposits on the membranes or in the substance of the brain; and the connection of this inflammation with the tubercles appears to be the same as in other parts of the body, *i. e.* it is never to be regarded as their sole cause, but often as their exciting cause; while, on the other hand, the tubercles previously existing are perhaps more frequently than in other cases to be considered as powerful predisposing causes of the inflammation which may be held to be intercurrent during their progress. Dr. West, in his Lectures published in 1848, restricts the term acute hydrocephalus to cases of cerebral inflammation in serofulous subjects, appropriating the name Enecephalitis to those of simple inflammation of the brain, which last are of extreme rarity. We do not, however, follow him by adopting this division. We borrow from the last writer our sketch of the appearances after death, which are separable into two classes, according as they are the result of inflammation or of the deposit of tubercle.

Among the former, a dry, lustreless appearance of the arachnoid on the surface of the brain is often observed. Sometimes the vessels of the pia mater are seen minutely injected, but more commonly there is effusion of fluid in its meshes, and in places yellow puriform lymph is seen in the depressions of the convolutions or along the sides of the blood-vessels. But opacity of these membranes and the effusion of yellow lymph is usually more conspicuous at the base of the brain. The latter frequently surrounds the olfactory nerves, and extends into the great fissures, agglutinating the flat opposed surfaces. And these morbid conditions are still more striking about the annular protuberance and optic nerves, and may reach backwards to the medulla oblongata.

Besides these changes due to simple inflammation, there is often a peculiar granular appearance of portions of the membranes, believed to depend on tubercular deposits. These occur, in what is considered their earliest stage, as opaque spots of a dead white colour, much smaller than a pin's head, or probably, when more advanced, as minute, flattened spherical bodies of the size of a small pin's head, either yellowish and friable under pressure, or greyish semitransparent, and firm. Of these two latter kinds the first are seen chiefly on the convexity of the brain, the second about its base; and either, at times, in the substance of the velum interpositum, or in the choroid plexus.

Fluid is found in the lateral ventricles in most instances varying in quantity from half an ounce to four or five ounces or more; while softening of the cerebral substance in every various degree

and extent is commonly observed, affecting more especially the fornix, septum lucidum, and corpus callosum, but involving at times the optic thalami, the striated bodies, and other parts of the brain also.

Large patches of tubercular matter are sometimes found deposited beneath the membranes on the convex side of the brain; and masses of greater or less size are met with imbedded in its substance. Tubercles in the chest and abdomen coexist almost constantly with those found in the head; but in proportion to the disturbance excited in one organ by their presence appears to be the tolerance of them manifested in others. Where the head suffers severely there is seldom much cough or dyspnœa; while phthisis may run its fatal course, and tubercles be found in the brain, although indicated by no previous symptoms.

In cases of acute hydrocephalus which are independent of tubercle, that is, in examples of the water-stroke, hydrocephalus hyperacutus, apoplexia hydrocephalica, of Dr. Gölis, or of the encephalitis of Dr. West, the evidences of active congestion and inflammation of the brain and its membranes are more strongly marked than in those of the tubercular disease.

The subjects of this form of hydrocephalus are robust, not cachectic children. Its premonitory symptoms are more severe, and of much shorter duration: sometimes they are wanting: its whole course is more rapid (occasionally terminating in two or three days); while its issue is scarcely, if at all, less fatal than that of the former kind.

Dr. Rowley was of opinion, that there exists a species of hydrocephalus where the water is collected between the tunica arachnoides and the pia mater, without any effusion in the ventricles of the brain. This has sometimes received the name of external hydrocephalus, to distinguish it from effusion into the ventricles, which is there designated internal: this variety requires no separate notice.

The preventive means that are available for warding off this disease from children of scrofulous constitution are such as belong to the treatment of scrofula generally, and will require to be early and sedulously enforced, especially when one or more members of a family have already fallen under it. These means are to be sought rather in a well-selected residence, a plain but nutritious diet, proper clothing, and regular exercise, than in medicine; while the child's progress should be watched by a medical attendant, careful to detect, and as far as may be prompt to remove, occasional functional disorders at their outset. As the predisposed often manifest some degree of mental precocity, it is prudent to warn parents to resist the temptation which this circumstance offers them, of allowing the intellect to be too early or too severely exercised by reading or study. When there has been a persistent liability to headach, the insertion of a seton in the neck will sometimes be attended with advantage.

The treatment to be adopted in the first stage of hydrocephalus should vary according to the symptoms which are present. If it is marked by an increased or inflammatory action in the vessels of the brain, which is usually the case, we should by all means recommend bleeding, and this at the onset of the disease; for when our fears as to the real nature of the complaint are awakened, not a minute should be lost in prescribing the remedies from which benefit is to be expected. The necessity of blood-letting in such cases seems very obvious, and it ought to be carried to such an extent as to answer a determinate end, viz. that of lessening topical congestion, and diminishing arterial action. Opening the jugular vein will be the most advisable way of drawing off blood in these cases, although the temporal artery has been opened in some urgent cases with very good effects, and on the succeeding day we ought to have recourse to the application of three, four, or more leeches to each temple, or to cupping, with previous scarification, which may, probably, be preferable to the application of leeches, both on account of the promptness with which the blood can be drawn, and the greater certainty of obtaining the quantity desired. It may be performed on the scalp, or behind the ears, or the nape of the neck, or between the shoulders. To trust wholly to leeches, without general bleeding, is only tampering with a most formidable disorder.

In abstracting blood from infants, a due consideration must be paid to their age. The repetition of both general and topical bleeding should depend on the appearance the disease exhibits; and as long as it is marked by an inflammatory action in the vessels of the brain, or shows symptoms of local congestion, these operations ought to be repeated from time to time, but more particularly the local detraction of blood, from the consideration that the activity in the extreme vessels, giving rise to the effusion, is somewhat independent of the action of the heart.

Purgatives, by lessening the determination to the head, will be necessary where the symptoms point out an increased or inflammatory action in the vessels of the brain. Calomel conjoined with jalap, or with scammony, is perhaps the best. One grain of the chloride with three or four of scammony should be given every three or four hours till the bowels have been very freely emptied; and continued at longer intervals, as long as any hope of benefit from its use can be expected. Dr. West, while recommending the free use of calomel, points out distinctly that it is from its cathartic action that advantage is to be derived, not from its specific effects. He mentions that he has seen children die whose mouths had been made sore by mercury, without any influence appearing to have been thereby exerted on the disease; and that he recollects two having died in a state of profuse salivation. Next in order of importance to blood-letting and free purgation is the application of cold to the shaven scalp, and this is best effected by means of some pounded ice tied in a bladder so as not to distend it, and

allowed to rest in contact with the naked head. It is in the first stage of the disease, immediately after blood-letting, that the local employment of cold is most likely to do good; and the temperature of the head affords the best guide as to the propriety of its continuance: when this sinks, it should be relinquished. At a later period blisters may be resorted to with most chance of benefit; and these may be applied either to the vertex or to the nape of the neck. We incline to prefer the latter situation; but care must be taken to prevent their causing troublesome sores if so placed. No inconvenience will arise from the pain produced by rubbing the raw surface against the bed-clothes, at a time when the child will be unconscious of all external impressions.

The occurrence of frequent vomiting in the first stage has deterred many from a resort to antimonials for controlling inflammatory action. We conceive, however, that a valuable aid in the treatment is thus unnecessarily rejected. Our first object in the exhibition of medicines is to act powerfully on the bowels; but we believe that moderate doses of antimony have no tendency to aggravate vomiting dependent on active congestion of the brain; that they even tend to abate it, by abating the inflammatory action in which it originates. In the same way we have often known ipecacuanha or antimony, by facilitating expectoration, put a stop to vomiting attendant on severe paroxysms of coughing. In acute hydrocephalus all our appliances are required at the commencement, and all must be exerted to the utmost. If we are to succeed at all, it must be by a powerful but brief effort, and by treatment too depressing for continuance. If we fail, as will generally be the case, we cannot take more blood, since the loss has been already as great as can well be borne. If we persevere in the use of purgatives, it must be with diminished frequency: they have had a fair trial. Saline medicines, with a little antimony, often have the effect of equalising the circulation, so as to prevent the alternations of heats and exhausting perspirations; and we may employ them as a kind of expectant treatment; while a less rigid dietary than at the beginning is enforced, broth or beef-tea in moderate quantities being allowed. Palliative treatment is all that we can now adopt; and where the debility is very great, and the restlessness extreme, gentle tonics, and mild narcotics, as a few grains of Dover's Powders, will not be inappropriate, as tending to prolong life, and to calm constitutional irritability, and so to give time for the full consequences of our previous active measures, and for any unlooked-for curative action that nature herself may set up. All experience, however, points out the powerlessness of medicines, and the unwarrantableness of hope.

CHRONIC HYDROCEPHALUS.

ALTHOUGH inflammation of the membranes of the brain, as will presently be seen, often plays a part in the production of chronic, as well as in that of acute, hydrocephalus, yet the difference between the two diseases in their symptoms, course, and treatment, is very strongly marked. In the former it is mainly the bulk of the effused fluid which gives its aspect and character to the affection; little constitutional disturbance arises directly from the slow inflammatory action which may be going on: in the latter, as we have attempted to show above, the opposites of both these particulars obtain. The former, in some measure, realises our idea of an inflammatory dropsy; the latter, that of an inflammation resulting in an increase of secretion.

Chronic hydrocephalus may be either congenital or acquired; it may follow the acute form of the disease—but this is said to be a rare occurrence,—or it may come on insensibly, and attract little attention till the functions of the nervous system become permanently deranged by the pressure of the effused fluid. Of the causes of this disease little is known with certainty, but a strong predisposition to it undoubtedly exists in families.

Dr. Joy, in his article on this subject, in the *Cyclopædia of Practical Medicine*, points out that, according to M. Gölis, there is not necessarily any enlargement of the head; that, in fact, the disease may occur in infants whose skulls are below the natural size, in those in whom it is of the ordinary magnitude, or, again, in such as have the bones of the cranium more or less separated by distention. In cases of the first kind, which are always congenital, the bones are firmly united from the first; and such are invariably and speedily fatal. Of those of the second kind we have no detailed account; and we confess that we have no individual experience with regard to them or to the former. We conceive that in both of these varieties there must of necessity be deficiency in certain parts, or in the general development of the brain, causing them to be even less amenable than usual to treatment: but while thus mentioning them, in deference to the high authority just mentioned, we dwell upon them the less because by other writers, as Drs. Evanson and Maunsell, as well as by Dr. West, they are passed over in silence. Chronic hydrocephalus, with enlargement of the skull, has an aspect so characteristic that it cannot fail to be recognised when existing even in moderate degree. The pressure of the contained fluid causes the several bones to assume a position which gives to the whole skull a form never belonging to it in health. Thus, the frontal bone is pushed forward, and the parietal bones are separated, and the occipital bone thrust back at their upper edges, while there is little or no disturbance of their lower attachments. The new position given to them severally is by a motion of rotation on their lower edges,

and the direction of their surfaces is therefore changed. Hence the forehead is more vertical, or projecting; and the same is true, in a less degree, of the sides, while the occipital bone is depressed and extended horizontally, and at the vertex there is a wide and flattened membranous expansion. There is no form which appears to us so illustrative of that of the hydrocephalic head, when existing in an extreme degree in those who have long laboured under the disease, as that of the rounded wooden mallet in common use among masons. The dwindled features offer a striking contrast to the enlarged skull, while the eyes appear compressed, as a consequence of the altered position of the orbit; or yet, though they may project as compared with the face, they are still overhung by the prominence of the forehead so as to have an aspect different from that attending their protrusion in other cases. The motions of the eyeball, as well as those of the lids, seem somewhat impeded, the upper eyelid being generally more or less depressed. The pupil is apt to be dilated, and the power of vision, which is often lost towards the termination of the malady, appears for the most part more or less impaired throughout its course. MM. Rilliet and Barthez conceive that the appearance of the head may mislead the attendant into a belief in the existence of chronic hydrocephalus under three different circumstances, when, nevertheless, it is not present. Thus, they say, they have seen an extremely diminutive condition of the face give, by contrast, an appearance of undue enlargement of the skull, similar to that presented by this disease. This is, however, a very rare, and comparatively unimportant, source of fallacy. Another condition sometimes simulating this disease depends on a spongy enlargement of the bones of the cranium, to which the authors above named give the inappropriate title of rachitism. The existence of similar states of other bones of the frame, as well as the general form of the skull itself, which can scarcely present all the mechanical conditions noted as belonging to hydrocephalus, will in this case come to our aid in establishing the diagnosis. The third source of fallacy arises from the possible existence of hypertrophy of the brain, a condition which, it must be allowed, it is difficult, if not impossible, to recognise with certainty, and which has deceived some careful observers. It is to be remembered, however, that this condition is of rare occurrence. It seems, indeed, allowed on all hands that the certainty of the presence of effused fluid, either in the ventricles or at the surface of the brain, can be known only with certainty when it has been actually seen. Thus Drs. Rilliet and Barthez admit only as examples of the cure of chronic hydrocephalus such cases as have recovered after the fluid has been let out by an operation; and Dr. West has shown that the symptoms of oppression and coma coming on at the conclusion, even of the acute disease, are not conclusive evidences of effusion, since they have existed where no abnormal quantity of fluid has been found after death.

We have said above that the causes of ehronic hydrocephalus are obscure and little understood. Drs. Rilliet and Barthez attribute much importance in its production to the compression of the vena Galeni, or of the right lateral sinus, by tubercular or cancerous deposits. Dr. West states that some signs of inflammatory action, as fibrinous deposit upon, or some thickening of, the membranes are rarely altogether absent ; but with regard to these last appearances it may be doubted how far they are connected with the origin of the disease, or belong merely to the period shortly antecedent to the fatal termination.

That the accompanying conditions are not always necessarily such as compromise life, is apparent from the fact that a few individuals affected by the complaint have lived to fifteen or twenty years, or more, and by occasional, though rare, examples of complete recovery under treatment. Nevertheless, the prognosis must be constantly unfavourable, as the disease is, in the vast majority of instances, known to be fatal. The co-existence of a tubercular condition of the mesenteric glands or lungs, in a large proportion of hydrocephalic patients, renders the prognosis of this class of diseases usually unfavourable.

Unpromising, however, as the affection may appear, we must not abandon all hopes of curing, or of at least alleviating, its symptoms. The remedies to which recourse may be had are either internal or external ; the former being such as promote the absorption of effusions, and their elimination by the kidneys, viz. mercury and diuretics ; the latter, mechanical expedients, such as external compression by bandaging and tapping. With regard to the former class, mercurial ointment should be applied to the scalp, and calomel administered internally—a plan advised by Gölis, who further insists upon the head of the patient being constantly covered by a woollen cap. Dr. Watson narrates the history of two patients, aged twelve and fourteen years respectively, in which all remedies had failed until a plan, originally recommended by Dr. Carmichael Smyth, had been adopted. This treatment consisted in rubbing down ten grains of erude mercury with about a scruple of manna and five grains of fresh squills ; the result being sufficient for a dose, which was ordered to be repeated every eight hours. “The effects of the remedy appeared to be great prostration of strength and loss of flesh, but gradual relief of all the sufferings.”* In one case ptyalism was only produced after the medicine had been continued for a period of three weeks, when the dose was continued twice a-day, and at length once, for another fortnight. A subsequent administration of *mist. ferri co.* completed the cure. The details of the second case are very similar to the above. In both instances salivation was produced, and a strong diuretic action established.

* Dr. Watson's Lectures on Physic, xxvii.

The second class of remedies, or those which act mechanically, can only be employed when the bony skull is still incomplete, when the bones are yet ununited. Support by the application of strapping round the head has been adopted in many cases with success, and particularly in patients of a pale, languid, and leucophlegmatic constitution. The bones of the head of weak children are often loose and fluctuating, while the appearance of the patient indicates the necessity of support, general and local. In using this remedy, Dr. West recommends M. Trousseau's plan of bandaging as the most serviceable.

"This eminent physician employs slips of diachylon plaster, about one-third of an inch broad, and applies them, 1st, from each mastoid process to the outer part of the orbit of the opposite side; 2nd, from the hair at the back of the neck, along the longitudinal suture to the root of the nose; 3rd, across the whole head, in such a manner that the different slips shall cross each other at the vertex; 4th, a strip is cut long enough to go thrice round the head. Its first turn passes over the eyebrows, above the ears, and a little below the occipital protuberance, so that the ends of all the other slips shall project about one-fourth of an inch below the circular slip. By this means a firm and equal and very powerful pressure on the head is secured."* In the hands of Mr. Barnard, of Bath, much success has attended the bandage treatment; but it is evident that the greatest caution is necessary not to produce pressure, as such a result can only serve to increase the end we are seeking to counteract. Support, and not compression, is the result at which we aim; and when this is obtained, and other circumstances are favourable, an alleviation of the symptoms may be in some cases expected. These signs of improvement will be a diminution in the frequency and strength of the convulsions, a disappearance of the strabismus, and other indications of a head disease, and a general improvement also in the bodily frame of the child.

Paracentesis, or tapping the hydrocephalic head, is noticed as far back as the year 1751, in the Philosophical Transactions for that period; but the employment of this mode of treatment was not well known until Dr. Conquest published the result of his practice, in the history of nineteen cases which had been subjected to puncture of the cranium.† The writer states, "I have now tapped nineteen cases, and of these ten were living when last heard of. Several of the children before the operation were reduced to the most deplorable condition, having frequent convulsions, with loss of sight, emaciation, &c.; but the diminution or disappearance of these symptoms has been very remarkable." He adds, however, very properly, that "in no instance has clearly marked congenital disease been benefited, and those cases have done best in which effusion manifestly resulted from inflammatory action, and in which

* Dr. West. Lectures on the Diseases of Infancy and Childhood, p. 91.

† Med. Gazette, 1837—38, p. 967.

cerebral excitement followed the operation." In the details of the mode I must refer to the paper itself, merely adding, that a delicate trochar must be introduced in the coronal suture, about one to one and a half inch from the anterior fontanelle, care being had to remove only a few ounces at a time, and to maintain due pressure during and after the escape of the fluid. In comparing the two modes described of mechanically treating chronic hydrocephalus, Dr. Watson aptly states that they are opposite measures, and adapted to opposite conditions of the brain, the one supplying a defect of pressure, and the other relieving its excess; and that the application of either requires a clear and cool judgment, and a constant attention to the symptoms which may arise during the treatment adopted.

HYDROTHORAX, OR DROPSY OF THE CHEST.

THE term Hydrothorax is applied by modern pathologists to an accumulation of simple serum within the cavity of the pleura: the fluid is then clear, transparent, free from fibrinous flakes or deposits, and formed independently of any previous inflammatory condition of the pleura. It produces injurious consequences more by its mechanical effects than by any peculiar quality which it possesses. According to its quantity, so are the lungs compressed by it; and where it is very considerable, they are usually found much reduced in size. The heart also is occasionally displaced, and drawn to the right or left of its normal position according to the pleural cavity affected. The disease is usually associated with serous effusions in other parts of the body, and is the frequent consequence of any affection which deprives the blood of its plastic elements, or impedes its circulation through the cardiac and pulmonary organs. In some cases hydrothorax exists without any other kind of dropsical affection being present, but it prevails more often as a part of a more universal dropsy. It frequently takes place to a considerable degree before it becomes very perceptible, and its presence is not really known; the symptoms, like those of hydrocephalus, not being always very distinct. In some instances the fluid is collected in both sacs of the pleura, but at other times only in one. Sometimes water is lodged also in the pericardium, but for the most part it only appears there when at some time a collection is present in one or both of the cavities of the pleura. In a few cases hydated cysts are found in the effusion, but these instances are comparatively rare.

Oppression of breathing, particularly on motion, and when in an horizontal posture, difficulty of lying on the side of the chest where effusion does not exist, sudden startings from sleep, with anxiety and palpitations of the heart, irregularity of the pulse, cough, occasional syncope, paleness of the face, a livid or mottled

colour of the lips, anasaruous swellings of the lower extremities, thirst, and a diminution of urine which is high coloured, and on cooling deposits a pink or red sediment, are some of the symptoms of hydrothorax, to which may be added, in some cases, a sensation of fluid on motion perceived by the patient in certain alterations in the position of the body. The local signs indicative of the presence of fluid in the cavity of the pleura are derived from inspection, palpation, mensuration, percussion, and auscultation.

Inspection. — The affected side is frequently visibly enlarged, the intercostal spaces effaced at the lower parts of the chest, and the corresponding muscles inactive, compared with those of the opposite side. An abnormal position of the heart may be readily discovered by observing the point at which the apex of the organ is seen to beat.

Palpation. — An absence of vocal fremitus, — that is of the vibrations usually communicated by the voice to the thoracic parietes, — characterises the presence of effusion in a pleural cavity.

Mensuration. — Detects the difference of size between the two sides of the chest, and the increase in circumference of the one affected. In employing the means of examination we must always remember, that the right is very frequently from $\frac{1}{4}$ to $\frac{1}{2}$ inch larger in circumference than the left side of the thorax, unless the individual is naturally left-handed.

Percussion. — The presence of a large quantity of fluid between parietes of the chest and the lungs will evidently deaden the sound of percussion, and to an extent proportionate to the quantity of effusion present. In such a case, the sense of resistance offered to the percussing finger is also considerably increased. By altering the position of the patient from the recumbent to the erect, or from one side to the other, corresponding differences may be frequently observed in the character of the percussion sound — results depending of course upon the altered level and depth of the fluid under examination.

Auscultation. — The first indication of the existence of fluid is shown in a muffled inspiratory murmur, the weakness of which varies directly with the quantity of fluid effused. When the disease is well marked, a complete absence of the normal murmur is especially found towards the base of the chest where the fluid is naturally accumulated to the greatest extent. At the root of the lungs, however, and between the scapula, a harsh bronchial respiration is generally audible, due to the presence of a quantity of compressed pulmonary substance around the larger bronchi. Instances occur exceptional to the rule above given, viz., when old adhesions maintain parts of the lungs in contact with the parietal pleura, and consequently cause strips of compressed pulmonary substance to traverse the mass of fluid to reach the side of the chest. At the corresponding parts of the thorax, bronchial respiration, and bronchophony are to be detected. The diagnosis

of these exeptions is by no means easy and requires much patient investigation.

Hydrothorax often comes on with a sense of uneasiness at the lower end of the sternum, accompanied by a difficulty of breathing, which is much increased by any exertion or motion, and which is always most considerable during night, when the body is in a horizontal posture. Along with these symptoms there is a cough that is at first dry, but which, after a time, is attended with an expectoration of thin mucus. There is likewise a paleness of the complexion, and an anasaruous swelling of the feet and legs, together with a considerable degree of thirst and a diminished flow of urine; occasionally the face swells and pits upon pressure, especially in the morning; and these signs of disease are accompanied by debility and loss of flesh. Under such appearances we have just grounds to suspect that there is a collection of water in the chest. The symptoms which have been described gradually increase, but their progress is slow, and a considerable time elapses before the disorder is fully formed.

The difficulty of breathing at length becomes excessive. The patient can seldom remain in a recumbent posture for any time, and the head and upper part of the trunk must be supported almost erect. The sleep is frequently interrupted on a sudden by alarming dreams, out of which the patient quickly starts up in bed, with a sense of impending suffocation. Convulsive efforts of the muscles subservient to respiration, resembling an attack of spasmodic asthma, with violent palpitations of the heart, generally accompany the paroxysms, which are also frequently excited by the most trifling voluntary motion, or by a fit of coughing.

When afflicted with these distressing symptoms, the patient is under the necessity of continuing erect, with his mouth open, and he betrays the utmost anxiety for fresh air. His face and extremities are cold; the pulse, with little exception, is feeble, irregular, and intermits in a degree seldom experienced in other disorders; and a pain or sensation of numbness frequently extends itself from the heart towards the insertion of the deltoid muscle of one or both arms. Excepting a livid hue of the lips and cheeks, the countenance is pale, and indicates a peculiar anxiety and ghastliness of appearance, and, together with the upper parts of the body, is usually covered with a profuse clammy sweat. Drowsiness, coma, or delirium, occasioned by the difficult transmission of the blood through the lungs, and want of sleep, frequently attend the latter periods of hydrothorax, and from the same cause the expectoration is sometimes bloody. Now and then a sensation of water floating about can be distinctly perceived by the patient, on any sudden change of posture.

Our prognostic in hydrothorax must in general be unfavourable, as it has not been often cured, and in many cases will hardly admit even of alleviation, the difficulty of breathing continuing to increase, until the action of the lungs is at last entirely im-

peded by the quantity of water deposited in the chest. In some cases the event is suddenly fatal, but in others it is preceded, for a few days previous to death, by a spitting of blood. Now and then hydrothorax ends in general dropsy, by which it is indeed sometimes accompanied from the beginning. But it more commonly impedes the action of the heart or lungs before universal dropsy has taken place, and destroys the patient apparently by suffocation, in consequence of the increased pressure of the accumulated fluid on the lungs; or by apoplexy, from pressure of the dark venous blood on the brain, not unfrequently accompanied with serous effusion, either on its surface or in its ventricles.

The treatment of hydrothorax is to be conducted on the same general plan with that of anasarca; viz. by emetics, purgatives, and diuretics. With respect to emetics, they do not seem, however, well calculated to afford any considerable degree of relief; and as the great desideratum in the cure of this disease is to evacuate the water without increasing the weakness still farther, purgatives, particularly those of a drastic nature, such as scammony, gamboge, &c., are not advisable. If the bowels are confined at any time, aperients of the saline class should be given from time to time, as the occasion may require. Possibly a combination of potassæ bitartras and calomel* taken at night, with something of a more active nature†, in a liquid form, the following morning, if necessary, would produce very beneficial effects.

The medicines to be chiefly relied upon in hydrothorax are diuretics, among which squills formerly held the first place, because, besides its diuretic tendency, it was supposed to possess a peculiar power of promoting the evacuation of fluid from the pulmonary surface. In administering it we should push its use as far as the stomach will bear without exciting nausea. Any of the forms recommended under the head of Anasarca may be prescribed; and besides the powder, we may try either the oxymel, vinegar, or tincture; indeed, the ingredients with which the squill is combined in the two former, may, perhaps, add to its virtues.

If, after a sufficient length of time, we should fail to procure any good effects from a use of the squill, we ought then to make trial of the digitalis, as advised under the before-mentioned head and that of Phthisis.

* R Potassæ Bitartrat. gr. x.—xx.

Hydrargyri Chloridi, gr. ij.—iv.

Pulv. Zingib. gr. v.

Syrup. Simpl. q. s. M.

ft. Bolus, horâ decubitûs sumendus.

† R Infus. Sennæ Compos. f. 3x.

Potassæ Tartrat. 3j.

Tinct. Jalapæ, f. 5ij.

Syrup. Rhamni, 3j. M.

ft. Haustus, primo mane adhibendus, si opus fuerit.

* Take Bitartrate of Potass, from ten to twenty grains.

Calomel, from two to four grains.

Powdered Ginger, five grains.

Syrup, a sufficiency to form a bolus, which may be given on going to bed.

† Take Compound Infusion of Senna, ten drachms.

Tartrate of Potass, one drachm.

Tincture of Jalap, two drachms.

Syrup of Buckthorn, one drachm.

Mix them, and let this draught be taken in the morning, if necessary.

Dr. Maclean offers it as his opinion*, that digitalis exerts no diuretic operation on the urinary organs; but that as a successful agent in dropsy, its effects are confined to the absorbents, and probably, in a certain degree, extended to the exhalants. When it increases the urinary secretion with promptness in dropsy, he thinks it may be attributed wholly to its restoring the impaired or lost function of the absorbing lymphatics, and probably by lessening serous effusion at the same time.

In administering digitalis, the principal circumstances to be regarded are, the age, strength, peculiar habit of the patient, stage of the disease, and degree of urgency of the symptoms. If the disease be far advanced, and immediate danger is indicated, the dose should be such as to produce a speedy effect. In general a grain of the powder, or an ounce of the infusion†, taken three times a-day, viz. morning, noon, and night, may be regarded as a full dose for an adult of moderate strength. If the herb be in perfect preservation, and genuine, the habit will most likely feel the influence of this quantity in a few days. In female constitutions, or in males whose strength has been much reduced, this quantity should not be given oftener than twice in the day (evening and morning), and in young subjects the dose ought to be reduced still farther in proportion to the age. Perhaps it would be best not to continue the use of digitalis for any length of time, but to stop for certain short intervals, as we shall thereby guard against its producing any deleterious effects, and prevent its disordering the stomach, or habit at large. During a course of this medicine, the state of the pulse, the stomach, the bowels, and sensorial functions, ought to be attentively watched.

If it acts powerfully on the bowels, and produces either pain, griping, or a number of copious watery evacuations following one another in quick succession, attended with extreme faintness, languor, and prostration of strength, its use must be discontinued for a day or two, and from ten to fifteen drops of the tincture of opium be given in some cordial water, repeating this dose at proper intervals, according to the frequency of the evacuations

* See pp. 158. and 160. of his Inquiry into the Nature, &c. of Hydrothorax.

† R Fol. Digit. Purp. contus. ʒjss.

Canel. Alb. contus. ʒj.

Aq. Fervent. f. ʒviij.

Infunde per horas quatuor in vase operto,
dein liquorem effunde.

ft. Infusum.

Vel,

R Infusi Digitalis Purp. f. ʒss.—ʒj.

Aq. Ment. Pip. f. ʒiij.

Potassæ Acetat. gr. xv.

Spirit. Æther. Nitrici, f. ʒj. M.

ft. Haustus, bis terve de die capiendus.

† Take Leaves of Purple Foxglove,
bruised, a drachm and a half.

Canella Bark, bruised, one scruple.

Boiling Water, eight ounces.

Let them infuse for four hours in a covered
vessel, then pour off the strained liquor
for use.

Or,

Take of the Infusion of Foxglove, from
half an ounce to one ounce.

Peppermint Water, three drachms.

Acetate of Potass, fifteen grains.

Spirit of Nitric Æther, one drachm.

Mix them, and let this draught be taken
twice or thrice a-day.

and the consequent debility. A lax state of the bowels, has however, been observed to be very favourable to the successful exhibition of digitalis and other diuretic medicines.

When foxglove disorders the stomach, and in consequence of its unguarded or injudicious use, produces alarming symptoms, frequent doses of the *confectio opii* in small bulk, as in that of a pill, with warm cordials in very small quantity (for the stomach immediately rejects everything in large draughts), warm, volatile, anodyne embrocations to the epigastrium, and spirituous fomentations to the feet, will be found in general effectual means of relief. If the stomach rejects everything, rich broth elysters in small quantity, with from 80 to 150 drops of *tinctura opii*, may be thrown up, and repeated according to circumstances.

When, after a fair trial of both squill and digitalis, the flow of urine is not increased, although these medicines have been employed in augmented doses, we must have recourse to diuretics of another class, such as the saline. Those in ordinary use are the *potassæ subcarbonas*, *potassæ acetas*, broom-ashes, and *potassæ bitartras*; the latter having been much used of late years, and frequently with great success, in several species of dropsy. — (See *Anasarca*.) We may give this drug either by itself or combine it with squill and digitalis*, small doses of elaterium, or with the other diuretics noticed under the head just referred to.

At the same time that we have recourse to these means, we should apply blisters to the chest, shifting them from one side of it to the other, whenever they show a disposition to heal up; to

* ℞ Fol. Digital. Purp. Exsicc. Pulv.
gr. vj.

Potassæ Bitartrat. ʒvj.

Pulv. Cinnam. Comp. ʒj. M.

ft. Pulv. in chartulas vj. distribuend. quarum unam dosem sumat bis terve de die ex Infusi Baccarum Juniper Cyatho.

Vel,

℞ Pulv. Digitalis Purp.

—— Scillæ, āā gr. ix.

Extract. Gentian. ʒj.

Ol. Junip. ℥xij.

Syrup. Simpl. q. s. M.

ft. Massa in pilulas xij. distribuenda, quarum unam capiat ter de die eum haustu sequenti.

Vel,

℞ Potassæ Bitart. ʒj. —ij.

Aq. Fervent. f. ʒjss.

Spirit. Junip. Comp. f. ʒij.

Tinct. Cinnam. C. f. ʒj. M.

ft. Haustus.

* Take Powder of Foxglove, six grains.

Bitartrate of Potass, six drachms.

Compound Powder of Cinnamon
one scruple.

Mix them, and divide them into six papers, of which take one dose twice or thrice a-day, mixed in a small tea-cupful of an Infusion of Juniper Berries.

Or,

Take Powder of Foxglove,

—— Squill, of each nine grains,

Extract of Gentian, one scruple.

Oil of Juniper, twelve drops.

Syrup, a sufficiency to form the mass, which is to be divided into twelve pills, of which let one be taken thrice a-day, with the following draught.

Or,

Take Bitartrate of Potass, from one to two drachms.

Warm Water, one ounce and a half.

Compound Spirit of Juniper, two drachms.

—— Tincture of Cinnamon,
one drachm.

Mix them.

prevent which they ought to be dressed with some kind of stimulating ointment, such as the ceratum sabinæ.

The breathing will not only be somewhat relieved by the frequent application of a blister, but the irritation excited by it in the urinary passages may possibly tend to facilitate the operation of the diuretic medicines.

When the difficulty of breathing is very great, and the legs and thighs are much swelled from anasarca, great relief has been afforded by a scarificator and small cupping-glasses being applied above the inner and outer ankle of each leg. It rarely happens that mortification attacks the scarified parts, and a great deal of water usually is drained off through the wounds.

Where hydrothorax is complicated with convulsive breathing, resembling the common periodic asthma, it may be relieved by giving a grain of opium every hour for two or three doses, with about a drachm of æther in cold water; continuing the digitalis as before recommended.

When the accompanying cough is so urgent as to prevent sleep and aggravate every other symptom, as sometimes happens, opiates combined with squills, and other expectorants, may be administered.

If the patient is far advanced in life and his strength much exhausted, or if the disease has been of any standing and considerable debility has ensued, it will be necessary to administer tonics, combined with diuretics, as recommended in the treatment of anasarca, or as prescribed below.* For preventing farther accumulation when the water has been removed, and giving strength and energy, they will also be proper.

In a letter from Mr. Barr, of Birmingham, to Dr. Beddoes †, we are informed of the happy effects which were derived in a case of hydrothorax from the aid of pneumatic medicine in conjunction with other remedies, which of themselves had availed nothing.

* R Myrrh. ʒij.
 Ferri Sulphat.
 Potassæ Subcarbonat. āā. ʒss.

 Extract. Anthemidis, ʒj.
 Syrup. Simpl. q. s. M.
 ft. Pilulæ xxxvj. capiat. ij. ter in die eum
 cochl. magnis duobis misturæ sequentis.

Vel,
 R Infus. Gentian Compos. f. ʒv.

 Potassæ Acetat. ʒss.
 Spirit. Junip. C.
 Spirit. Armoracæ, C. āā f. ʒss.

 ——— Æther. Nitric. f. ʒij. M.

ft. Mistura.

* Take Myrrh, two scruples.
 Sulphate of Iron,
 Subcarbonate of potass, of each
 half a drachm.
 Extract of Camomile, one scruple.
 Syrup, a sufficiency to form the
 mass. Divide this into thirty-six pills,
 and let two be taken three times a-day,
 with two table-spoonfuls of the following
 mixture.

Or,
 Take compound Infusion of Gentian,
 five ounces.
 Acetate of Potass, half a drachm.
 Compound Spirit of Juniper,
 Compound Spirit of Horse-radish,
 of each half an ounce.
 Spirit of Nitric Æther, two
 drachms.

Mix them.

† See his Considerations on the Medicinal Use and Production of Factitious Airs.

He states, that his patient's face was become pale and emaciated ; his eyes stared as if taking their last conscious view of objects ; his legs were swelled to such a degree that the skin was become much inflamed, and in danger of bursting ; he had a continued tenesmus, and made very little urine ; he could not endure a horizontal posture for a moment, but was under the necessity of being bolstered upright in bed through the night : even then he slept little, and that little was disturbed and unrefreshing, for he frequently started from his sleep, under an impression of immediate suffocation.

One quart of oxygen, mixed with nineteen of atmospheric air, was directed to be inhaled every day ; but as the symptoms were very urgent, it was thought right to join the use of those active medicines which had been prescribed for him before to no effect. He was ordered to take half a grain of digitalis in substance every evening, and four ounces of a decoction of the cortex cuspariæ in the course of each day.

On the third night after inspiring the factitious air he found himself more composed, he could remain longer in one posture, and the startings during sleep seemed both less frequent and less violent. Every night he was sensible of amendment ; in ten days he could bear the removal of several of the pillows that bolstered him up in bed, and he could sleep for three or four hours without one starting fit. The swellings of his legs began now to subside, the tenesmus was entirely removed, the quantity of urine was considerably increased, and he could walk upstairs with much ease ; his appetite and cheerfulness began to return, and the pale face of disease to give place to the florid countenance of health.

In the course of the second week the quantity of oxygen had gradually been increased to two quarts a-day, diluted as before. In four weeks from the patient's beginning to inspire oxygen not a vestige of the disorder remained, except weakness ; he could lay his head as low in bed as when in perfect health, and sleep the whole night ; no swellings of the legs remained, no difficulty of breathing upon ordinary exertion, and every function was performed with regularity and ease. He discontinued the use of all medicines, except a laxative pill occasionally ; and at the age of sixty seemed to possess uncommon strength, agility, and vivacity.

Such is the report made by Mr. Barr of the effects of vital air in hydrothorax ; which, from having proved so highly beneficial, we may employ as an auxiliary mean.

That aliment which contains the greatest quantity of nutriment in the smallest bulk, and which requires, at the same time, the least effort of the digestive organs to convert it into animal juices, reason and experience point out as the best in hydrothorax. The food should be well masticated, and the free motion of the diaphragm never interrupted by a full meal. During a course of diuretic medicines the patient should drink freely of liquids, and particularly of such as are supposed to increase the flow of urine.

— See Ascites.

If all our endeavours to carry off the water, or promote its reabsorption, prove fruitless, and a fluctuation is evidently perceptible, we may then perform a paracentesis of the thorax. The probability of success resulting from the operation must depend upon many circumstances. Thus the quantity of fluid present, and the volume to which the lung has been necessarily compressed by it,—the facility with which the lung can return to its original size when relieved from the abnormal pressure,—the nature of the fluid itself, its purely serous or mixed character,—the age of the patient, his habits, constitution, condition of organs generally,—will, of course, powerfully influence the course of events succeeding to the evacuation of the effusion.

The practice of evacuating water contained in the thorax by an incision, is of as ancient a date as the days of Hippocrates. For the mode of performing the operation, I beg leave to refer to the ordinary surgical works.

Before the evacuation of the water in hydrothorax, the patient's situation seldom admits of much bodily exertion. Something, however, may be done by the frequent and diligent use of a flesh-brush, or by friction with flannel all over the body, but especially over the chest, and as near the seat of the complaint as possible. From the circulation of blood being very languid in the feet and legs, these parts are in general very cold, and ought, therefore, to be enveloped in worsted or fleecy hosiery stockings, being well robbed every morning and night.

The great coldness of the bodies of dropsical subjects, and the total want of perspiration, evidently point out the necessity of warm clothing; and there are no cases in which a flannel covering will prove more beneficial, or more grateful to the sensations of the patient.

As soon as the evacuation of the water, or the relief of urgent symptoms will permit, no day should elapse without the patient walking, riding on horseback, or in an open carriage; for the frequent but gentle agitation of the body, and the moderate exertion of the muscles, together with the salutary influence of a pure, healthy atmosphere, will assist greatly in giving tone, vigour, and energy to the whole frame.

IV.—*INTUMESCENTIÆ SOLIDÆ*, OR SWELLINGS OF THE SOLID PARTS.

RACHITIS, OR RICKETS.

THE characteristic marks of this disease are, an uncommon size of the head, swelling of the joints, flattened ribs, incurvation of the spine, distortion of the cylindrical bones, protuberance of the belly, and general emaciation.

Preternatural softness of the bones is met with in two forms, either as a disease of infancy and childhood, or as belonging to a more advanced age. It is to the former of these only that the term of rickets is appropriately applied; while the latter has been designated as *mollities ossium*, or *osteo-malacia*.

In the former, the faulty constitution and figure of the bones must be viewed as resulting from defective or depraved development of parts that have never attained perfection of growth; in the latter, a degeneration or destruction of parts which once possessed a perfect organisation. Mr. Shaw tells us (*Medico-Chirurgical Trans.* vol. xxvi. p. 336.), that, independently of the softening and consequent incurvation of the bones to which rickets has been long known to give rise, it has the effect also of arresting the growth. It will be interesting to notice some of the more prominent alterations in different parts of the frame, as resulting from the conjoint operation of these two agents.

In the rickety child, says Mr. Stanley (p. 219.), the head is below the standard dimensions from the arrest of its growth; but this is more marked in the bones of the face than in those of the cranium; hence, in such individuals, the cranium appears large in proportion to the face. Mr. A. Shaw notices (at p. 355. of the vol. before quoted), that the form of the front of the head, as it is generally presented in rickety persons, is characterised by being remarkably square and full, the forehead commonly projecting beyond the level of the face. He had before remarked, that while the cranium appears unusually large and capacious, the face is unusually small (p. 342.).

The spine suffers changes in its figure from the yielding of its weakened fibro-cartilages and ligaments. It becomes curved and twisted, and its curvatures are either lateral or in the antero-posterior direction. A single curve occurs in a portion of the spine, or extends through the whole of it, or there are two or three curves occupying the entire spine. Extensive lateral curves are usually combined with some degree of yielding of the spine in the antero-posterior direction. The curvatures of the spine arising from rickets have no characteristic features distinguishing them from such as arise under various other circumstances. (Stanley, pp. 220, 221.) The sides of the chest are, in most instances, flattened, and the sternum is thrust forwards; but the softened ribs yield in various directions, and the form of the chest varies in

different cases, in correspondence with the varieties in the curvature of the spine.

The pelvis is small, from the interruption of its growth, and remarkable changes occur in its form from the yielding of its bones and ligaments.

The following are the changes which here ensue. The yielding of the sacro-iliac symphyses permits of a movement of the sacrum in such a direction as to make its promontory project forwards and its apex project backwards; and, at the same time, the iliac bones are forced backwards in a direction to overlap the sacrum, and to approximate towards each other, in some instances to such a degree that not more than the space of an inch has intervened between their posterior borders.

The necks of the thigh bones, yielding to the superineumbent weight, lose their obliquity; they gradually approach to a horizontal direction, and the dropping of the heads and necks of the thigh bones in some instances takes place to such a degree, that the heads of the bones become situated below the summits of the great trochanters.

In the lower limbs, the weakness of the system, which gives rise to curvatures in the bones, also occasions a yielding of the ligaments of the knee and ankle joints; hence, the distortions of these joints become part of the phenomena of rickets. And there are instances of such distortions of the knee and ankle joints unaccompanied by any bending of the bones. (Stanley, pp. 223, 224, 225.)

The short stature of persons who have suffered during childhood from rickets, writes Mr. A. Shaw (Med.-Chir. Trans. vol. xxvi. p. 337.), has often been observed. But it may not have been so commonly remarked, that (making allowance for the loss of height caused by the greater or less incurvations of the bones in such individuals) certain parts of the figure are always stunted to a greater degree than others. The head, trunk, and upper extremities continue of about their natural size, while the pelvis and lower extremities are peculiarly diminutive.

Such are the more usual alterations of external form which the general framework of the body is wont, in various degrees, to undergo under the influence of the disease in question. For an account of the changes of internal structure, we again refer to Mr. Stanley. The rickety bone is not simply a soft bone; it undergoes, during the development and subsidence of the disease, a series of curious and somewhat complex changes. Hitherto it has been supposed, that the change consists simply in the reduction of the bone to its cartilaginous elements; but in the recent analysis of a rickety bone, it is shown that, besides the diminution of its earthy salts, there is also a change in the animal matter, so that the extract obtained from it does not yield either chondrin or the gelatine of bone. The epiphyses are united to the shafts in rickety bones less firmly than in healthy bones.

Perfect reparation of rickety bones would imply the recovery of their natural form and texture; and this does, under favourable circumstances, take place. In most instances, however, of considerable distortion, the bones regain hardness of texture, but remain curved or twisted, and of proportionally small dimensions.

The rickety bone recovers its hardness by the approximation and consolidation of its lamellæ; but the interspaces of its cancelli remain wider than in healthy bone. A remarkable feature in the reparative process is the deposit of so large a proportion of earthy matter in the soft bone as to give it a hardness and weight much beyond that of healthy bone, in some instances almost equal to that of ivory. Other circumstances of interest arise in this process; they are, the obliquity of the lamellæ and fibres within the hardened bone, also the greater thickness of its walls on the concave than on the convex side of its curvature, and, where long bones, as the tibia and fibula permanently retain an angular form, the medullary tube becomes obliterated at the angle, so that the bone here consists only of compact tissue.

The production of rickets appears to be due to the same causes as the production of tubercle in the lung and elsewhere; yet the existence of such an alliance is not indicated by frequent simultaneous occurrence in the same individual. In the bodies of twenty rickety children, tubercle of the lung was found only six times; and it appears that tubercle occurs less frequently in children who have died from rickets than in those who have died from other diseases: nor is rickets commonly accompanied by enlargement of the superficial absorbent glands or by other marks of scrofula. Rokitansky observes, to the same effect, that rachitis and tubercle are very rarely associated; that, particularly in the instances of rachitic malformation with contraction of the chest, tubercle is scarcely ever found to exist. (Stanley, pp. 217, 218, 219. 228, 229, 230.)

Rickets is an hereditary disease in some families, though parents that have been affected with it have sometimes a healthy and robust offspring. The children of the indigent and profligate, who are badly nursed in general, being kept on a bed the greater part of the day, instead of being tossed about in the arms, are those most generally afflicted with rickets; but it must be allowed that there are many circumstances which conduce to this disease; such as a damp and cold residence, impure air, inattention to cleanliness, bad nursing, want of due exercise, a deficiency of food, and debility.

There is reason to believe that feeding children at the breast, or bringing them up by hand, conduces to the production of rickets, the result being much the same whether the food be insufficient or inappropriate and unassimilable. Rickets has been observed in the fœtus. In some instances the disease has commenced immediately after birth; it rarely, however, appears before the fifth or sixth month, and the most frequent period of its commencement

is between eighteen and twenty-four months. It very seldom commences after puberty.

It usually comes on slowly, and the first appearances of it to be observed are, a flaccidity of the flesh, emaciation of the body, paleness, and loss of colour in the cheeks, if they have been rosy, and a slight degree of tumefaction of the face. The head at the same time appears large with respect to the body, and the sutures and fontanelle are preternaturally open. Dentition is very slow, and much later than usual, and the teeth that do appear soon spoil, and are apt to fall out. The ribs lose their convexity, the sternum protrudes in the form of a ridge, the spine is incurvated, and the epiphyses at the several joints of the limbs become swelled, while at the same time the limbs between the joints appear to be more slender than before, and, from their inability to support the weight of the body, become somewhat bent, and at last much distorted.

With these symptoms the child experiences a great diminution of its strength, is averse to making the least exertion, and is unable to walk. Its appetite is not often much impaired, but its stools are usually frequent and loose, and its abdomen appears uncommonly full and tumid. With regard to its mental faculties, the understanding is most generally very mature, but in a few cases stupidity or fatuity ensues. At the commencement of the disease there is no fever present; but, in its more advanced stage, a frequent pulse, with other febrile symptoms of a hectic nature, attend.

In some cases the disease proceeds no further, and the child gradually recovers its health and strength, the limbs being left, however, in a distorted state. In others it continues to increase, till at last every function of the animal economy becomes affected, and the tragic scene is closed by death.

The rickets, although attended with much distortion of the bones, and various other unpleasant symptoms, very seldom proves fatal; and we are only to regard it as attended with danger where the distortion becomes so great as to affect the office of the lungs and other organs; or where the enlarged size of the head shows that it contains a considerable quantity of water within it; or where the food is passed unchanged by digestion, which denotes a highly diseased state of the mesenteric glands. Children at the breast are more exposed to peril than those that have reached three or four years.

On examining the bodies of those who have died while still labouring under rickets, the brain is found large, but often in other respects natural; sometimes the ventricles or cavities of the arachnoid and of the spine are filled with a limpid fluid. The lungs are compressed, and occasionally displaced, by the alteration in the form of the thorax; marks of inflammation are often apparent on the surface and in the substance of the lungs, which last is sometimes hepatised, and at other times contains tubercles. In

some rickety children, from one to five years old, the thymus gland has been found much enlarged. The liver and spleen are almost in every case enlarged. The muscles are pale, flabby, and wasted, and the rigidity of death is rarely met with in such subjects. (Cyclopædia of Praet. Med. vol. iii. p. 618.)

In some instances the bones in rickets have been observed* to be nearly of the consistence of common cartilage; have presented throughout an areolated texture, the cells being in some parts large, and containing a brown gelatinous substance.

In the cure of the rickets, we should proceed on the plan of invigorating the system by bracing the solids and promoting digestion and the formation of good chyle. For this purpose we must have recourse to such medicines as possess a tonic power, together with frequent immersion in cold water, the effects of which may be much increased by friction with flannels, a free, open, and dry air, a generous, nutritive diet, with wine, and proper exercise, by carrying the child in a horizontal posture. An erect one might be apt to increase the deformity. If the system be not exceedingly reduced, cold bathing during the summer months, and tepid bathing in the winter, will essentially conduce to recovery.

Tonic medicines, as the different vegetable bitters, especially the cinchona bark, and the milder preparations of iron, are those most to be depended upon in the treatment of rickets. And the combinations of alkalies with these, as the liquor potassæ with decoction or extract of sarsaparilla, will sometimes be useful. The bicarbonates of potash, soda, and ammonia should, according to circumstances, be added to the tonic infusion, where there is irritability of the stomach or bowels. The article on Scrofula may be consulted for some such, as well as for an account of many forms of chalybeates well adapted to rickety children. The cod liver oil too may be given with advantage in these cases. Dr. Cummin tells us in the article on Rickets already quoted (Cyclop. Praet. Med. vol. iii. p. 617.), that sometimes the child, at the approach of convalescence, exhibits an extraordinary liking to particular articles of food; as, for instance, to common salt, which in one instance was believed by the parents to have been the means of cure. The suggestions of such natural cravings should always be well weighed by the physician, and not too lightly rejected. The bowels are to be kept gently laxative with rhubarb, joined to a small quantity of hydrargyrum cum cretâ.

When the rickets are accompanied with mesenteric obstructions, deobstruents, with small doses of rhubarb, and repeated frictions on the abdomen, will have a beneficial effect.—See Scrofula and Atrophia.

In cases of difficult dentition, we should resort to the means advised under this head; and in those of worms, to vermifuge

* See Medico-Chirurgical Transactions, vol. vii. part ii. p. 407.

medicines. In venereal taints we may prescribe tonics combined with mercurials.

Absorbents have been employed in rachitis by some practitioners, it is said, with considerable success, and may therefore be combined with the tonics before recommended.

In rickets the principal advantage is to be derived, however, from general treatment: the patient, if a resident in a city, is to be removed to the country, where an elevated and dry situation should be chosen; he is to be supplied with nourishing diet and a moderate quantity of wine. But as the poor, among whom the disease is most frequently observed, cannot change their residence, the diseased should be placed in the highest apartment of the house, which should be kept well ventilated.

The bed on which a rickety patient lies should consist of a hair matrass or oaten chaff, or it might be made of dried fern-leaves, among which some aromatic herbs were mixed. Such beds are better than those made of feathers, for they do not yield to the weight of the body, and they are much drier. If the patient be very young, he should be placed on his back, so that the weight of his body might have as little influence as possible on the bones; but as it is painful to remain constantly in this position, he may be allowed to sit up now and then, but not on a soft chair: he is to be placed on a seat capable of making a uniform resistance, with a high straight back, and without arms. He should not be allowed to walk for a considerable time; at first he will be incapable of doing so without assistance, and the strings and ribands necessary for supporting him contribute, by pressing on the parietes of the thorax, to deform that cavity.

In conjunction with general measures directed to the strengthening of the system, (says Mr. Stanley, p. 230.) such local measures are to be directed to the weak and distorted structures as will add to the vigour of the circulation in them, and thereby improve their nutrition. Frictions of the part tend to this result, but exercise of the muscles is the more decided means of its accomplishment. The employment of mechanical contrivances is clearly indicated when the exercise of the part can not be permitted without increase in the curvatures of the bones, or in the distortion of the joints which have yielded from the weakness of their ligaments. Without such aid the rickety bone may recover its firmness, but will retain its deformity, and the ligaments of the distorted joint may recover their tone, but it will be with no lessening of the distortion. One condition essential to the proper use of all mechanical apparatus wherever applied, is, that neither by its weight, nor by the mode of its application, should it restrict the free action of the muscles of the part which is the seat of the distortions. In other words, the apparatus must be so constructed and applied, that it can be worn without hindrance to the natural movements of the part. And, besides, it is desirable for the full effect of mechanical contrivances, that their action should be continuous, not remitting.

The details of the particular form of instruments adapted to the exigencies of individual cases must be sought for in works devoted to the subject of deformities, as in that of Mr. Tuson on the Causes and Treatment of Curvature of the Spine; and in others of a like character.

Mollities ossium, or preternatural softening of the bones occurring in adults, has so near resemblance to, or rather so close an analogy with rickets in children, that we here give a brief sketch of its leading features as derived from Mr. Curling's Memoir on some forms of Atrophy of Bone, published in the Med.-Chirurg. Transactions, vol. xx. 1837.

The author considers this disease as a variety of what he has termed eccentric atrophy of bone, that is of a wasting extending from within outward, spreading in fact from the medullary membrane towards the periosteum. This form, he tells us is, of so rare occurrence, that scarcely more than twenty well authenticated cases are to be found in the records of medicine. Of the sixteen examples which he has tabulated, thirteen were observed in women, and three only in men, a sufficient evidence of its far greater prevalence in the former sex. Of these one only was fatal at the age of twenty-one, thirteen between the thirtieth and fiftieth year, and two in considerably more advanced life, one, namely, at the age of sixty-one, and one at seventy-two. The details of its course are in several instances incomplete, but it appears that in three it had a comparatively rapid course of only a few months, while in nine it had a far more protracted duration, going on for many years before terminating in death. The disease, like rickets, appears to advance from the lower to the upper limbs. In one strongly marked instance, the bones of the feet were much less firm than in the natural state, the tibia consisted of a mere shell of bone, elastic, and yielding under the finger like a thin piece of ivory, the cancelli being removed, and the interior likewise filled with medulla. The shaft of the thigh bone presented a very similar appearance. The bones of the skull and pelvis might be cut with a strong knife, but the ribs and vertebræ were little affected. The walls of the bones of the arms were preternaturally thin, and their medullary cavities enlarged, yet not so as to yield to pressure, or to be cut without the use of a saw. Some spots of extravasated blood were found at different parts of the interior of the bones. The articulations are always in a healthy state: the teeth are never known to be affected in this disease. The periosteum is everywhere natural. No morbid appearances were found in other parts, except some flabbiness of the heart, considerable calcareous deposit in the lumbar and iliac glands, some three or four ounces of fluid in the arachnoid cavity, and some tubercles in the dura mater. Equal weights of the bones of the fore-arm in this case, and in that of an individual dying at about the same age, gave, on analysis by Dr. Pereira, considerably less earthy, and far more animal matter in the former than in the latter.

The muscles usually waste, probably from long disuse; and in one case fat was deposited in their substance, though for the most part deficient in the body generally.

In some cases the utmost distortion has been observed, from the bending of the bones without fracture in all directions; while in others, though less advanced, the bones are fractured by the slightest force. But this probably depends, as suggested by the author, upon the more or less rapid decay of the earthy as compared with that of the animal constituents. In some instances there is fragility in the first instance, and subsequently flexibility.

The progress of the disease is nearly always accompanied by severe pains, often supposed to be rheumatic; always preceding the affection of the bones, and sometimes indicating those about to be attacked. In some instances the urine and saliva have been in a morbid condition, the former yielding a whitish sediment, and the perspiration has been observed at times to be abundant, in one example unctuous, and in another abundant and fetid. No evidences of malignant disease have been found co-existing with this affection. Several of the women had borne numerous children, and one had been repeatedly confined during the progress of the disease, as appeared from the increasing difficulty of delivery in successive labours, resulting from augmenting distortion of the pelvis. The last child was removed by the Cæsarean section, which proved fatal to the mother.

At present we are unacquainted with any preventive or curative treatment which can arrest this remarkable malady in its progress to a fatal termination.

Cretinism is to be met with very generally among the inhabitants of that part of Switzerland nearest to Italy, in the deepest valleys of the Alps, where the atmosphere is extremely humid, and is a disease which has been supposed to be only as high a degree of rachitis as human nature can possibly sustain.* Those who inhabit the deepest and most remote valleys are reduced to the lowest state of imbecility and idiotism; in those whose abodes are somewhat more elevated, the mental powers are not so completely obtunded; and others in still more elevated situations, and of course less exposed to exhalations, will probably be deformed merely by swellings about the joints, and other symptoms of rachitis. Those who are nearer to the summits are perfectly exempt from all these appearances.

The production of Cretinism by the bad quality of the air and food, the neglect of moral education, and other evils attendant upon poverty and indigence, and by perpetual intermarriages, is supported by facts so strong and pointed, that the greater number of cases in mountainous districts may safely be ascribed to these causes, instead of to the use of snow-water, as some have supposed.

* See Dr. J. F. Akerman's Inquiry into the Causes of a singular Deviation from the Human Species in the Alps.

That a use of snow-water produces either Goître or Cretinism, is an absurd idea, for persons born and living in places contiguous to the glacières, who drink no other water than what flows from melting snow and ice, are not afflicted with these disorders, which are observed frequently in places where snow is unknown.

The causes of Cretinism begin to operate upon the system soon after, and perhaps even before birth; the want of energy in the parent is communicated to the offspring, the children become deformed and cachectic very early in life, the growth and development of the body are impeded, the abdomen becomes enlarged, and the glands swelled in various degrees; moreover, the powers of the mind remain dormant, and are at length obliterated, partly from the want of proper organisation, and partly from the total neglect of every thing like education.

The head of the Cretin is deformed, his stature diminutive, his complexion sickly, his countenance vacant and destitute of meaning, his lips and eyelids coarse and prominent, his skin wrinkled and pendulous, his muscles loose and flabby, and frequently he is affected with an enlargement of the thyroid gland, or goître, which greatly adds to his unsightly aspect. Cretinism, however, is frequently observed without any affection of the thyroid gland, and this gland is often much enlarged without any affection of the intellectual faculties. The qualities of the mind correspond to the deranged state of the body, and the disease prevails in all the intermediate degrees from excessive stupidity to complete fatuity.

Cretinism was observed in Chinese Tartary by Sir George Staunton, in a part of that country much resembling Savoy and Switzerland in its Alpine appearance. Dr. Abercrombie mentions* that many cases of it are to be met with in the Pyrenees and Les Cévennes of France.

A race of Cretins existing in the South of France has lately been presented to the notice of the profession under the appellation of Cagots. In that part of France this degraded race is widely extended; the individuals of it, deformed, with bronchocoele, have an indistinct articulation, an air of stupidity, a sallow complexion, and an extreme apathy to all external objects. The Cagots are pretty much the same as the Cretins of the Alps; they both present the same degree of imbecility, the last remains of the intelligence of man, together with the last traces of the human form.

Cretinism may be prevented by removing children from the confined and dirty places where it prevails, and nursing and educating them in the higher parts of the mountains. The disease is looked upon as belonging to indigence and poverty; for in every place where Cretins are met with, many well-looking persons of both sexes are to be found, and these are, without exception,

* See his Inaugural Dissertation on Alpine Idiotism.

persons of a higher class in society, who live in better houses, and can supply their physical and moral necessities. A diminution of the number of Cretins is believed to have taken place, and is ascribed to the draining of the fens, the more healthy situation of the huts, the clearing of woods, &c., and to the progress which has been made in education among them. It is from the farther pursuit of like measures that we can alone hope for its farther abatement and ultimate extinction.*

ORDER III.

IMPETIGINES.

A DEPRAVED habit, producing preternatural affections of the skin or external parts of the body, characterises this Order.

SCROFULA.

SCROFULA consists in hard, indolent tumours of the conglobate glands in various parts of the body; but particularly in the neck, behind the ears, and under the chin, which, after a time, suppurate and degenerate into ulcers, from which, instead of pus, a white curdled matter, somewhat resembling the coagulum of milk, is generally discharged, mixed with a whey-like fluid. Other indications of serofulous disease are chronic lippitudo, or blear eyes, chronic inflammation of the conjunctiva without much heat or redness, but with great intolerance of light, tumid and chapped upper lips, redness and swelling of the septum of the nose and of the lower parts of the nostrils, certain maladies of the joints popularly known as white swellings, some forms of caries of the bones, and perhaps rickets, as also some varieties of moist eruptions behind the ears, and that slow eating ulceration of the nares termed lupus. In the enumeration of these latter marks of the disease we have nearly followed Dr. Watson; and we must further remark that it is a character of each and all of the manifestations of serofula to be chronic in their duration, and very intractable to treatment.

It must be allowed, however, with regard to several of the above diseases, that their occurrence is not in every individual instance conclusive evidence of the existence of serofula. Thus Messrs. Rilliet and Barthez write concerning two of them: "We no more believe in the serofulous nature of every caries or eczema than we believe in the tubercular nature of all pneumonia and every en-

* See an interesting article, *Du Crétinisme, de son Histoire, et de son Traitement, avec une Notice biographique sur le Dr. Guggenbühl*, in the *Bibliothèque Universelle de Genève*. Février, 1850.

teritis." Enlarged lymphatic glands do in numerous, though only in a minority of instances, suppurate and discharge their contents, and then subsequently regain their natural size, or even waste away altogether. But independently of this process, Mr. Phillips conceives that their subsidence (which he has found to occur in four-fifths of the numerous cases examined) is a proof that no scrofulous matter had been deposited in them — that, in fact, their enlargement had not been dependent upon scrofula. (Phillips on Scrofula, p. 47.) As we shall have frequent occasion to quote from the writer just named, we may mention that he published, in 1846, a work upon Scrofula, evincing so great labour, research, and precision as to constitute him a high authority on the subject of which he treats.

We may, I think, in the present day, dismiss at once the opinion which had formerly many supporters — that scrofula is a merely local disease. Its constitutional origin is now universally admitted. "I conceive," writes Mr. Phillips (at p. 26.), "that scrofula is a disease of the constitution, and that it is manifested by certain external signs, of which swelling of the subcutaneous lymphatic ganglia is the most conclusive. Supposing one or several cervical glands to become tumid, in the apparent absence of any obvious local irritation; this would constitute a strong ground for suspicion that the constitution was suffering under the taint of scrofula: it would not, however, constitute more than suspicion unless the swelling were accompanied by the deposition of scrofulous matter. "A change of structure," he tells us further on, at p. 39., "dependent on increased vascular action alone, precedes the deposition of scrofulous matter in the gland about to become its receptacle; and the matter is deposited, it may be, at several points: those points enlarge, and may ultimately coalesce, and the intermediate tissue of the gland may disappear." At an early period it sometimes happens, but this is very unfrequent, that the matter presents an appearance not unlike that of the grey, translucent, tubercle-like matter found in the lungs. The common rule, however, observed in lymphatic ganglia is to present no intermediate stage between the simple enlargement and induration with vascularity in the gland, and the deposit of opaque scrofulous matter as an amorphous, greyish, buffish, or yellowish mass, irregularly granular, and not unlike moist old cheese.

A question which has been discussed, and which perhaps is even now not finally settled, is whether this deposit, characteristic of scrofula, is identical with tubercle. Mr. Phillips himself admits that both chemical analysis and microscopical examination have failed to establish the existence of any important physical difference between the two. Nevertheless, he dissents from the opinion of their identity, on the ground of the marked differences of the laws under which deposits take place in the two cases.

He states (and his careful and extensive investigations entitle his conclusions to great respect), that scrofula is contrasted with

tubercle in several particulars. Thus the former is far more prevalent before, the latter after, puberty: the former, in England and Wales at least, attacks far more males than females, while the reverse is the case with the latter: and he conceives that some local inflammatory action precedes, almost constantly, the deposit of serofulous, but not with like frequency that of tubercular matter. He urges the difference of the localities and circumstances in which their respective victims are most numerous, as another ground of distinction, since he finds that deaths from consumption are 19 per cent. greater in the town than in the country districts of England and Wales, while those from serofula are 100 per cent. less in the former than the latter. Lastly, he adduces the rarity with which marks of previous serofulous disease are found in the bodies of such as have died of pulmonary phthisis, as an argument against the identity of the essential elements of the two.

To us it appears that several, if not all, of these contrasted circumstances may be accounted for by the diversities of the seats of the deposits, without necessitating the inference that the deposits themselves are distinct; neither does it appear to us a necessary conclusion that deposits, if identical in their nature, must observe the same laws irrespectively of wide differences in the ages of those who are affected by them, nor that proneness to their occurrence in youth must be followed by a like tendency in adult age. We can offer only these general considerations in abatement of the force of Mr. Phillips's arguments; and while we allow them not to be completely satisfactory, we conceive that, upon the whole, the weight of probability inclines to that which Mr. Phillips himself allows to be the more prevalent opinion, namely, that serofulous matter differs in no essential particular from tuberculous.

We remove, then (wrote Drs. Rilliet and Barthez, vol. iii. p. 5.), from the head of serofula all those maladies which are not tuberculous; or rather, we should prefer to see the word serofula excluded from nosology, and that of tuberculation take its place.

While we give above the ascertained presence of serofulous matter as the only proof of the existence of serofula, we must remark that, in actual practice and during the life of the patient, such proof is rarely attainable, and we must therefore take the general characters and course of the maladies before us as our guides in determining their intimate nature.

"We admit (say the authors last quoted, vol. iii. p. 4.), that all these affections (caries, periosteal swellings, ophthalmia, &c.) are of a serofulous nature when they depend upon a general morbid principle which is always the same. But what this principle is, and how we are to learn that a malady is developed under its influence rather than under some other, it is impossible to determine in the existing state of science."

An argument, if any were needed, in favour of the constitutional origin of serofula is found in the altered condition of the blood. Thus Mr. Phillips concludes, from sixty-seven examin-

ations of that fluid in persons suffering from this disease, that the eoagulum is relatively small and usually soft, that the quantity of red globules is much reduced, that in several instances the chloride of sodium was deficient in amount, while the salts altogether exceeded the healthy standard; and these changes he conceives to precede the deposit of the proper scrofulous matter, and to constitute the scrofulous constitution, diathesis, or cachexia, as it has been indifferently termed.

The first appearance of the disease is most usually between the third and seventh years of the child's age; but it may arise at any period between these and the age of thirty; after which it seldom makes its first attack. It most commonly affects children of a lax habit, with a smooth, soft, and fine skin, fair hair, rosy cheeks, and a delicate complexion; but it is occasionally met with in those of a dark one. It likewise is apt to attack such children as show a disposition to rachitis.

On the subject of the accidents of scrofula, Mr. Phillips says (at p. 37.), that the child may be fair or dark, pallid or ruddy, well fed, clad, and lodged, or all these may be the worst possible; he may be the child of wealth or of poverty, may live in town or country, may be the offspring of old or of young, of healthy or of sickly parents, may be born within the tropics or live within the arctic circle. Under all these circumstances scrofula may be developed. The condition of the system favourable to the deposit of scrofulous matter is marked by *no certain* external signs up to the moment when the glands become tumid.

The scrofulous diathesis may either supervene to other diseases, or it may be hereditary. In some children this constitution is very early apparent. Those with lax, soft muscles, a large head, a great tendency to enlarged joints and obesity, with a marble colour of the skin, sometimes having a fine flush upon the cheeks, at others without it, and with turgid vessels on the membranes of the eyelids, evidently show this diathesis. In addition to these indications, it may be stated that the lymphatic glands in divers parts of the body are prone to enlargement. When the matter is formed in tumours or sores, it is usually thin and mixed with flakes, and the sores have little tendency to heal. The patients are very subject to coughs, turgescence of the vessels of the mucous membranes, and a disordered state of the bowels. In the plurality of instances they are rather lax, but sometimes they are costive. Teething for the most part is attended with considerable difficulty and irritation, and the teeth are in general soon attacked with caries. It is in children of a scrofulous constitution that hydrocephalus and phthisis most frequently occur, and in all such there is a deficiency of activity in the vascular system. The abdomen is tumid, and the mesenteric glands enlarged, and in some cases hardened.

The hereditary origin of scrofula, or of a predisposition to scrofula, has met with very general assent. Mr. Phillips's researches,

however, tend to show that the manifestation of the disease is not referrible to this cause so frequently as we might be disposed to believe. Thus he found 20·92 per cent. serofulous, or 421 out of 2021 children born of untainted parents; 22·92 per cent. serofulous, or 483 out of 2107, whose father alone was serofulous; 23·78 per cent. serofulous, or 563 out of 2367, the offspring of mothers only serofulous; and 24·8 per cent. serofulous, or 271 out of 1091 children whose parents were both serofulous. So that serofulous parentage existing on both sides was followed by scarcely 4 per cent. more of scrofula in the progeny than was met with when the parents were both sound as far as serofula was concerned.

Serofulous persons are often comely and handsome, and rather distinguished for acuteness of understanding and precosity of genius. They are, however, seldom robust, or able to endure much fatigue without having their strength greatly exhausted, and their flesh much wasted; but when they once begin to regain these, their convalescence is usually rapid.

Scrofula prevails most in those climates where the atmosphere is cold and humid, where the seasons are variable, and the weather unsteady. From latitude 45 to 60 is the principal climate of this disease. In the East and West Indies it is rarely met with, but when the natives are brought into this or any European country, they often suffer very severely by it. A long continuance of inclement weather may increase a predisposition to serofula; and in persons already much predisposed to it, any uncommon, although temporary, exposure to wet and cold, is sometimes an exciting cause of an immediate attack. Besides climate and exposure to moist air and atmospherical vicissitudes, every other circumstance which weakens the constitution and impairs the general strength of the system predisposes to serofula; thus, breathing impure, tainted air, unfit for respiration, and living upon food of an unwholesome and indigestible nature, which does not afford proper nourishment to the body, favours an attack of serofula, by reducing the strength of the system, and making the person weakly. The neglect of due personal cleanliness and of salutary exercise, indolence, inactivity, the want of warm clothing, confinement in cold, damp habitations, depressing passions, &c., may all be regarded as so many exciting causes, and satisfactorily account for the prevalence of the disease among children employed in large manufactories, as at Manchester, &c. It does not admit of doubt that a serofulous diathesis may be acquired.

The matter which serofulous sores generate does not seem to possess much aerimony; for if the sore be of limited extent, the system does not suffer by its continuance; nor do the neighbouring parts seem to be much affected by its vicinity. Neither is it contaminating, as has been proved by Mr. Kortum*, who at-

* De Vitio Scrofuloso, p. 218.

tempted to transfer scrofula from one person to another by inoculation: but, although he took great pains to insert the matter completely, and although he repeated the experiment frequently, yet all his attempts failed of success; as no disease was communicated, nor even any evident irritation excited at the place where the matter was inserted. All apprehension of scrofula being propagated by contagion or contact appears, therefore, to be a groundless prejudice.

A modern writer* considers scrofula as a disease arising from and generated by disorders of the digestive organs; and this opinion seems well founded. Some writers have attributed much influence in its production to the habitual use of impure water, among whom is the late Dr. Heberden. In my opinion, scrofula is a disorder closely connected with a delicate constitution, lax fibres, and debility.

It is a disease of very frequent occurrence in this country, particularly in large manufacturing towns, appearing under various forms, and in different degrees of severity, from a state of mildness which hardly betrays any perceptible external symptoms, to a state of violence which produces the most miserable objects of human wretchedness; and whenever it mingles with any accidental or local complaint, it makes all the symptoms worse, and more difficult to cure: this happens particularly in syphilis.

We advance no new theory in saying that scrofula depends upon deficient or depraved nutrition; but the inferences that flow from such a conclusion seem not always to have been legitimately drawn. A relative importance has been given to some circumstances as conducive to this evil to which they appear not entitled; and, if treatment based on perverse assumptions has not altogether failed of effecting good, it has often been open to the objection of doing good at a very great, and sometimes even at a cruel cost. We shall presently endeavour to make out what is the real value in the treatment of scrofula of the sea-side residence, or of the change of air often procured for the sufferer, at the price of very great sacrifices. Mr. Phillips has done good service in showing that the results of experience are in accordance with the dictates of common sense; and that for the prevention or cure of a malady dependent on faulty nutrition, the supply of proper food in sufficient quantity is a condition of such paramount importance, that no other physical advantages can compensate for its absence; while, if this condition be fulfilled, sound health may be maintained in defiance of many other adverse circumstances. For properly ministering to nutrition, not only must the nutritive material be furnished of fitting kind, and in adequate abundance, but the machinery, the organs of digestion, by which it is to be prepared for assimilation, and, to be appropriated, must also be in

* See Essay on Scrofula, by Mr. Richard Carmichael, p. 26.

a state of health and vigour; otherwise mal-assimilation and depraved nutrition may arise from enfeebled or perverted action upon the best nutritive material, as well as from faults in that material itself. Now general exercise, which strengthens the whole muscular system, directly favours and facilitates all the mechanical operations of the body, such as those of respiration, and of the circulation of the blood, and indirectly promotes the functions of secretion and excretion. Hence exercise, even when it consists in severe and continued labour, is found greatly to minister to health, and to protection against scrofula. Another condition of great importance for the preservation of health is a pure atmosphere, without which respiration cannot be carried on in perfection. These particulars are noted by Mr. Phillips, when he writes (at p. 249.), "It is not enough to provide the means of making the blood pure by the influence of good food and of good air; but means must be taken to make it circulate through the body with the necessary vigour. This it is which gives a value to the games of children, whereby active exercise is provided. Three things are, therefore, necessary to produce perfect health in a child, even when born with the customary vigour,—good food, good air, good exercise. Give the child these, and no matter what may be the ailments of his parents, or the climate in which he lives, you will do much to build up a vigorous and healthy man. We have deviated in our arrangement of the conditions of health from that of Mr. Phillips, because we believe, that, practically, insufficient exercise, or rather a measure of bodily activity falling short of the requirements of health in a degree to be greatly injurious, is a far more general cause of disease than any deterioration of the atmosphere to which mankind is subjected, except in comparatively rare instances. They who talk so much about the impure air of towns as the source of disease seem to forget that the recognised laws of the equable diffusion of gases, the varying currents due to differences of temperature, the movements impressed by winds, and, possibly, other agencies, are constantly at work in securing a uniform constitution of the atmosphere, and that these operate so effectually as to defy a chemical appreciation of any great difference in the composition of the air, whether collected in a crowded city, or on the summit of a mountain. There is, we believe, a prestige of evil unfairly attaching to the impurities of the atmosphere of large towns, arising with those who charge upon it all the ailments more justly referrible to the cares and irregularities often inseparable from a town life. Mr. Phillips, however, found 18·5 per cent., or 6069 scrofulous children among 32,670 living in large towns in England (not including London), while 29·3 per cent., or 6025 out of 20,540, were similarly affected of those living in rural districts." (p. 203.)

An importance, according to this author, only inferior to that of food, belongs to the influence of season, scrofulous diseases

occurring in greatest number and severity in winter and spring, and declining in both respects during summer and autumn. Nevertheless, as to the effects of climate and temperature, his conclusions are much at variance with previously current opinions. On this part of the subject he thus expresses himself, at p. 221. of the work so often quoted above : —

“When considering the prevalence of the disease, it was shown that we have no proof that climate, whether the temperature be high or low, variable or uniform, or the atmosphere be dry or humid, has any very obvious influence of itself in producing or preventing scrofula. At St. Petersburg, with a mean temperature of $3\cdot23^{\circ}$, and a general mortality of $3\cdot770$; and at Moscow, with a mean temperature of $3\cdot6^{\circ}$, and a general mortality of $4\cdot010$; and at Iceland, where the centigrade thermometer in winter indicates 20° minus, there appears to be less scrofula than at Lisbon, with its temperature of $71\cdot2$, or than at Amsterdam, Berlin, or Calcutta. So at Madeira, with its high temperature and low range, there is as much scrofula as among the juvenile convicts in Parkhurst Prison. Other causes than climate must, then, in all these countries, exercise a most important influence in producing the disease; and, among the causes of scrofula, we have seen that food holds the first place.”

The notion that scrofula is eminently an English disease is combated in the earlier part of the volume, as so entirely incorrect, that the writer (p. 91.) feels warranted in stating that there is no country, so far as our information extends, in which the people are more free from the disease than in England and Wales; and, again (at p. 207.), he claims to have shown that the prevalence of scrofula is greatest in India, where it has been assumed to be least, and least in England, where it has been assumed to be greatest.

The evils resulting from improper food begin, in very early life, with those altogether or partially brought up by hand; a practice which, as will be seen in our first Article on the Diseases of Children, causes an immense mortality among infants; and, according to Mr. Phillips, lays the foundation of scrofula in the survivors; a conclusion which he has rendered probable by argument, rather than demonstrated by statistical details. We are told that a distinguished French physician, M. Guérin, is about to publish an elaborate work in proof of the frequent appearance of the kindred malady of rickets, as a consequence of feeding infants; and, if this be so, it adds strength to the presumption that scrofula has often a like origin.

Succinct evidence of the influence of deficient diet upon older children is furnished by the observation (Phillips, p. 172.) that in a large town 127 out of 784 children well cared for in endowed and other schools, or only 16 per cent., were scrofulous; while 164 out of 500 children in national schools, brought up at home, and for the most part worse fed and clothed, or 32 per cent., laboured

under marks of the disease. Again, out of 9342 children, the inmates of 63 union houses, 2139, or only 22·89 per cent., were scrofulous; while, of 22,704 living with their parents in the same districts, and presumed to be far worse off for food and clothing, 8353 or 36·79 per cent. were found in the same condition. (pp. 171, 172.)

Lastly, as a general argument, it is urged that scrofula is less prevalent in this country now than it was formerly (say two centuries ago), and it is believed that there has been a corresponding improvement in the food of the people. (p. 176.)

The operation of this cause has been witnessed in the almost complete disappearance of land scurvy of late years; and, within the period named above, the proportion of the population employed in manufactories, and living in crowded towns (and therefore, according to some, more prone to the attacks of scrofula), must have increased enormously.

We rejoice in all attempts at improving the condition of the poor, we wish every success to the efforts of the benevolent in ameliorating their residences, and would procure for the whole population the advantages of good drainage and of cleanliness; but we would correct a misconception, under which both medicine and philanthropy might go astray, if the primary importance of good diet be overlooked, and the ill-fed agricultural labourer be excluded from the sympathies of the humane.

Mr. Phillips, after showing (p. 230.) that scrofula is comparatively rare (only 1·6 per cent.) among those employed in the cotton mills of Manchester, gives the following summary of the results of his inquiries on the influences of various occupations:—

“The evidence I have collected upon the question of the influence of factory labour upon human life, has produced on my own mind a strong conviction that occupation in factories, though in many respects less to be desired than occupation in the open air, is yet accompanied by so many counteracting circumstances, that the evils which may be inseparable from that occupation are mitigated, if not counteracted, by the increased means of procuring the necessaries of life which it affords.” (p. 235.)

The attacks of scrofula seem much affected or influenced by the seasons. They begin usually some time in the winter and spring, and often disappear, or are greatly amended, in summer and autumn. The first appearance of the disorder is commonly in that of small oval or spherical tumours of the absorbent glands under the skin, unattended by any pain or discoloration. These appear in general upon the sides of the neck, below the ear, or under the chin; but in some cases the joints of the elbows or ankles, or those of the fingers and toes, are the parts first affected. In these instances, we do not, however, find small moveable swellings, but, on the contrary, a tumour almost uniformly surrounding the joint, and interrupting its motion.

After some length of time, the tumours become larger and more

fixed, the skin which covers them acquires a purple or livid colour, and, being much inflamed, they at last suppurate and break into little holes, from which at first a matter somewhat puriform oozes out; but this changes by degrees into a serous discharge, much intermixed with small pieces of a white substance, resembling the curd of milk.

The tumours subside gradually, while the ulcers at the same time open more, and spread unequally in various directions; after a while some of the ulcers heal, but other tumours quickly form in different parts of the body, and proceed on in the same slow manner as the former ones to suppuration. In this way the disease goes on for some years, and, appearing at last to have exhausted itself, all the ulcers heal up, without being succeeded by any fresh swellings; but leaving behind them ugly puckerings of the skin, and sears of considerable extent. This is the most mild form under which scrofula ever appears.

Sir B. Brodie, in his Clinical Lectures (Medical Gazette, vol. ii. 1846), has given a very instructive description of scrofulous disease of the knee-joint, from which we have derived the following sketch, hoping that it may be serviceable, not only in facilitating the recognition of the affection in that, but also in other joints, as the ankle, and supply useful principles of treatment still more widely applicable. One remarkable feature of the disease is, the absence of pain in the beginning; the child limps a little in walking, but so little that his parents scarcely notice it; and by and by this limping increases, and the knee is observed to be a little larger than natural, and not so moveable as it should be. The joint is generally a little bent, and presents a rounded appearance. There is no pain on handling it, no effusion into it; the enlargement and rounding arise from a deposit of serum and lymph in the areolar tissue external to the joint, and appear greater than they are, from the wasting of the muscles of the thigh. The leg is somewhat stiff, but there is some degree of motion; after a time the cartilages begin to ulcerate, and then there is pain and startings of the limb at night, and then the general health begins to suffer. By and by an abscess shows itself on one side of the joint, and comes slowly forward; then another appears at a different part, and at last there may be three or four openings, or sinuses, leading to different parts of the knee. When the joint has been destroyed by repeated abscesses, the leg is thrown into a half-bent state, the head of the tibia is drawn backwards, and lodged in the ham, producing a kind of dislocation, varying in degree according to circumstances.

This malady, according to the author, has its origin in the bones; first, there is a disease of the cancellous structure, consisting, principally, in a deficiency of earthy matter. At first there is increased vascularity, together with softness of the bone, and there is effusion of serum into the cancelli. Afterwards, the bone becomes less vascular, and, instead of being red, is yellow, from

the deposition of a yellow, cheesy, unorganised matter; at last, there is scarcely a vessel carrying red blood to be seen. Simultaneous changes take place in the cartilage attached to the extremity of the bone; at first it is more vascular, and is less adherent to the bone, and spots of ulceration may be observed on its under surface, and in the space thus formed there is a small deposit of very vascular lymph. Ulceration goes on, extends through the cartilage into the joint at one spot, and this increases in diameter; the same happens in other parts of the cartilage, and ultimately the ulcerative process destroys the whole of it. The cartilage may be destroyed to a considerable extent without the occurrence of suppuration, but for the most part suppuration occurs, at an early period, in separate collections. Steadily, but slowly, the abscesses find their way to the surface, forming numerous circuitous sinuses. Sometimes there is death of a portion of the bone, which separates, and lies loose in the joint, making the case entirely hopeless.

In cases which have been neglected, or attained an extreme degree of severity, the patient not unfrequently sinks under some secondary disease, as tubercles in the lungs, or diseased mesenteric glands, or effusion of serum into the ventricles of the brain; and the possible existence of these, or other ailments, in a still latent state, constitutes a reason why the surgeon should hesitate to amputate the limb, even in cases where there is no hope of effecting even an imperfect cure, or preserving the life of the patient; for any internal affection is found to receive an impetus to its progress from the operation, which may hasten the decease of the sufferer. The surgeon, therefore, before he determines to amputate, even in extreme cases, must ascertain that internal organs are free from disease.

In order to effect a complete cure, that is, one in which the motion of the joint may be preserved to the patient, it is necessary that the disease should be recognised in its earliest stage. Sir B. Brodie thinks that long-continued treatment will, under such circumstances, be successful; but he warns us, that if a single drop of matter have been formed within the knee, recovery, in nine cases out of ten, can only be obtained at the expense of the loss of the movement of the leg, by the formation of what has been termed a stiff joint.

The principles of treatment laid down by this eminent surgeon are much the same in every stage of the disease, and he has ranged his instructions under two heads; viz. first what ought not, and secondly what ought, to be done.

His negative precepts involve a prohibition of all local blood-letting, by means of leeches or cupping, and, a still stronger one, of taking blood from the system.

He condemns as worse than useless the employment of blisters, setons, issues, irritating ointments, and all other means of producing counter-irritation.

He protests against probing any sinuses that may appear, as a practice which may be productive of much harm, and can do no good.

His first positive precept is, that the joint should be kept in a state of perfect repose; this he characterises as the only local treatment required in the early stage of the disease, and the chief thing to be attended to, even in the most advanced. The simplest method of effecting this is that of employing leathern splints on each side of the joint, or splints of gutta pereha, spoken of by Mr. Stanley. But, as the disease has its origin in a morbid condition of the constitution, it is needless to attempt to cure it by mere local treatment. Hence, when any existing disorders of the digestive organs have been corrected, when the foul tongue has become clean, and unhealthy alvine evacuations have been succeeded by natural ones, under the use of a little calomel, or blue pill, or grey powder, and occasional purgatives, tonics are to be given perseveringly, of which the author gives a preference to the vinum ferri of the old Pharmacopœia. Of the constitutional treatment of scrofula generally we shall shortly speak more at large; only remarking here, that, in a malady such as that before us, perseverance is essential to success. The author, indeed, states that the splints may require to be worn continuously for three or six, or even twelve months; while the constitutional treatment, with occasional intermissions and variations, may have to be persisted in for two or three, or even for four or five years. Where the best result that can be anticipated is the formation of a stiff joint, it is of very great importance that the leg should be straightened before the bones become united. This extension of the leg can generally be gradually effected, by means of a screw attached to an instrument, in which the limb is inclosed, as it were, upon a double inclined plane; the smallest rotation of the screw causing a lessening of the elevation of the instrument, and some progress in the straightening of the limb.

A diseased state of the vertebræ, which implicates their bodies, occasions a protrusion of their spinal processes, and sometimes a compression of the medulla, is generally allowed to be closely connected with scrofula.

When scrofula is confined to the external surface, it is by no means attended with danger, although, on leaving one part, it is apt to be renewed in others: but when the ulcers spread, erode, and become deep, without showing any disposition to heal; when deep-seated collections of matter form among the small bones of the hands and feet, or in the joints; or tubercles in the lungs, with hectic fever, arise, the consequences, in all probability, will be fatal. Scrofula sometimes lays the foundation of hydrocephalus, and at times it attacks all the viscera of the abdomen, the mesenteric glands, ovaria, liver, and kidneys. The external parts of the body liable to scrofulous disease, independent of the lymphatic system, are the tarsi, the thyroid gland, the mammae,

the testicle, and the bones and other structures connected with joints.

“ Serofula in the periosteum (says Mr. Stanley, in his *Treatise on Diseases of the Bones*, p. 346.) produces thickening and induration of its tissue, and, in some cases, serous or purulent effusion into its thickened tissue, or between it and the bone. Serofulous thickening of the periosteum gives rise to a hard and painless swelling, which, in a cylindrical bone, usually occupies its entire circumference. This is the disease of frequent occurrence upon the bones of the fingers in children, enlarging the finger, and giving to it the appearances of disease of the bone. The same changes occur from serofula in the periosteum of flat bones, especially of those of the cranium and face; also upon the long bones, especially the humerus, radius, ulna, and tibia. And here the thickening and induration of the periosteum occasions a firm, solid swelling over the entire circumference of the bone, which it is often difficult to distinguish from enlargement of the bone itself.

“ Serofulous inflammation of the periosteum, through all its consequences, is strikingly contrasted with the effects of serofulous disease in bone, which has advanced to its tuberculous stage; for, in the latter, deformity must ensue, as a consequence of the destruction of the bone; but the former is still curable, and without deformity.”

“ I cannot doubt,” says the same author (at p. 245.), “ the occurrence of two other forms of serofulous disease in joints, preceeding or independent of the serofulous disease of the bones; one originating in inflammation of the synovial membrane, the other in inflammation of the cellular tissue around the joint.”

It is enough thus to have lightly touched upon these various localisations of the serofulous deposit in bone, in periosteum, in synovial membrane, and in areolar tissue. The principles of treatment advocated by both these surgeons are the same; the local means are such only as secure immobility to the parts affected, while the constitution is to be invigorated by those measures which are generally conducive to this end. In serofulous disease of the bodies of the vertebræ, which goes through stages exactly analogous to those described in the similar affection of the bones near the knee, namely, first that of increased vascularity, and then of softening, from deficiency of earthy matter, and then of tubercular deposit, and, lastly, of destruction, with suppuration, Mr. Stanley repudiates all local depletion and counter-irritation for modifying the primary affection, but thinks them useful in correcting the inflammation which may have been propagated to the spinal chord, or nerves, or to their investing membranes; and such measures are especially to be resorted to under the existence of symptoms of spinal irritation, on account of the uncertainty allowed to exist as to the exact condition of the vertebræ themselves.

Tuberculous matter in bone, as in other parts, is capable of

conversion into a chalk-like substance, and in this form may remain inert, but this conversion is the exception: in general, no other result is to be looked for but destruction of part, or of the whole, of the diseased bone, and no reproductive process ever ensues upon this destruction; hence, when it occurs in the bones of the finger, there must be proportionate shortening of that part, after consolidation has taken place. When the bodies of the vertebræ are softened, and their cells filled with tuberculous matter, the reparative process which ensues consists in the removal of the diseased bones, and in the approximation and union of the healthy vertebræ above and below them; but this approximation does not occasion any narrowing of the spinal canal, but, on the contrary, an actual widening; so that at this period the feebleness, twitchings, and painful spasms of the limbs usually subside, at the same time that, from the projection of the spinous processes, it is evident that the bodies of the diseased vertebræ have been removed. (Stanley, pp. 311, 312.)

In cases of this disease of the spine, the recumbent position must be long observed; that is to say, for a year at least, to give opportunity for the production of those changes which must take place, for effecting the most favourable termination that can be hoped for.

We pass over many affections of an acknowledged scrofulous origin, because these, as *tabes mesenterica*, scrofulous ophthalmia, &c., will be found under separate heads; and we proceed to review the constitutional treatment which has been recommended, and is allowed to be necessary, in all and every form under which this malady may appear.

On opening the bodies of persons who have died of this disease, many of the viscera are usually found in a diseased state, but more particularly the glands of the mesentery, which are not only much tumefied, but often ulcerated. The lungs are frequently discovered beset with a number of tubercles or cysts, which contain matter of various kinds. Scrofulous glands, on being examined by dissection, feel somewhat softer to the touch than in their natural state; and, when laid open, they are usually found to contain a soft, curdy matter, mixed with pus. Examinations, after death, of those who have laboured under a diseased state of the spinal column have shown that almost all the glands are found in an enlarged, diseased, and often suppurated condition, and that cysts are also discovered, connected with the diseased vertebræ, that contain curdy, purulent, and other matter of unequal consistence.

The languor and debility which prevail in scrofula naturally indicate the necessity of employing a plentiful supply of wholesome nourishment, in such quantity as the stomach can bear without being overloaded; and, of this, light animal food ought to form a fair proportion. The quantity must be regulated by the appetite and powers of digestion. Milk, puddings, rice, and other farinaceous substances ought to constitute the remainder of the patient's

diet. Where there is occasional atony in the stomach and languor, a moderate allowance of wine will be likely to prove salutary, but it will be best to give it between meals, with a bit of bread or cake.

To ward off an attack of the disease in those who show a predisposition to it, it will be advisable that they take every day regular and moderate exercise in the open air, continued sufficiently long to dispose them to rest, without inducing any degree of fatigue. When the patient is either too young or too weakly to take sufficient exercise, by exertions of his own, external frictions assiduously applied, and persisted in for a length of time, are usually substituted, and, in young children in particular, have been practised in many cases with a very good effect. A mother's nursing is the great preventive of scrofula in infants.

Another highly important external application is bathing the body. The bath may be either warm or cold, simple or impregnated with various medicinal substances. Cold bathing, especially in the sea, is a remedy universally employed in scrofula, and apparently with the greatest advantage in many cases: for it appears not only to improve the person's health and strength, but likewise to promote the dispersion of enlarged glands, and the resolution of indolent swellings in the joints, even after they have attained a considerable size. But, in order that cold bathing may be practised with safety and advantage, the constitution should have vigour to sustain the shock of immersion without inconvenience, and the system must be free from fever or latent visceral disease. If the immersion be succeeded by a general glow over the surface of the body, and the patient feels cheerful, and has a keen appetite, we may conclude that the bath agrees with him; but if he shivers on coming out of the water, continues chilled, and becomes drowsy, we may be assured that the cold bathing will not prove serviceable, and ought, therefore, to be discontinued. In all weakly patients, the immersion should be momentary.

When any doubt is entertained with regard to the probable effects of cold bathing, it will be a prudent precaution to premise the use of a warm bath, either of sea water, or one artificially impregnated with sea salt, which is often serviceable in those cases of scrofulous weakness which forbid the employment of a cold one. One great advantage of warm bathing is, to relieve a certain dryness of the skin, which often accompanies scrofulous emaciation and weakness, and occasions much oppression and distress. A small number of immersions is, in general, sufficient to accomplish the object, and to prepare the patient for the safe and beneficial use of the cold bath; though, when a great degree of scrofulous debility prevails, it may be necessary to continue the warm bathing, at the rate of two or three immersions a week, for some time.

At the commencement of a course of warm bathing, an immersion from twelve to twenty minutes, with a temperature of water varying from 90° to 100° of Fahrenheit's thermometer, may be recommended; but persons much accustomed to the practice of warm

bathing generally remain longer at a time in the bath, and use a higher temperature.

To promote the efficacy of the warm salt bath, frictions with some stimulant substance are often employed, and with advantage, particularly in certain cases of scaly scrofulous eruptions and some of the more solid kinds.

The clothing of scrofulous patients ought to be of such a nature as completely to protect the wearers against any inclemency of the weather, and to keep them comfortable and warm; a flannel dress ought, therefore, to be worn next to the skin in cold weather.

Every weakly scrofulous person who wishes to recruit his health and strength should retire to bed betimes each night, rise early in the morning, and, if possible, select for his residence a situation where the air is pure and dry.

The chloride of mercury is by far the most celebrated of all the purgative medicines which have been employed in the treatment of scrofula, and it is undoubtedly a serviceable remedy in many stages of the disease. To enjoy its beneficial effects, however, with safety, we must be careful to avoid giving it in so large a quantity as to produce the specific effects of mercury to any extent; for it is well known that any deep mercurial impression on the system aggravates every symptom of scrofula.

Our own view of the uses of mercury in this disease nearly coincides with that of Mr. Phillips, when he says (p. 273.) "that, in the sense of a remedial agent, capable alone and under ordinary circumstances of removing scrofula from the constitution, mercury is not entitled to any confidence." Calomel in combination with rhubarb, or jalap, is beneficially exhibited in doses repeated every second or third day at the commencement of the treatment, till the tongue has become clean and the alvine evacuations healthy, and afterwards it may be resorted to, occasionally and at much longer intervals, for maintaining these conditions; while, at the commencement also, saline medicines with small doses of antimony, or (as we prefer) of ipecacuan, assist the purgatives in restoring the healthy functions of the skin and kidneys. Or, where there is much irritation of the bowels, and the patient is fretful in temper from general feebleness and discomfort, or from actual pain, small doses of Dover's powder, as one or two grains, according to the age of the patient, given in the saline medicine at night, or two or three times a-day, according to the circumstances of age and state, will often form an important part of the preliminary treatment. In this, as in the vast majority of maladies, the first object of the physician should be to correct disordered functions of the organs indirectly implicated; to reduce, that is, the specific disease to its simplest, its least complicated, state before he directs his resources against it. Such tonics and specifics only are fit to be administered, during the existence of disordered functions and of depraved secretions, as tend to improve those functions and secretions as well as

to act upon the primary disease, and the cases are few for which such are to be found.

Mercurials, except in as far as they assist in effecting the objects already pointed out, are, it seems to us, of little or no service in relieving scrofula.

Other writers, however, and among them Mr. Phillips, rely upon these agents as exercising some undefined action, termed alterative. The mercurial preparation in which he places most confidence, on account of its possessing this power, is the bichloride, which he gives to the extent of one-twentieth of a grain twice a-day in syrup of sarsaparilla. Probably the hydrargyrum cum cretâ, given to the extent of from one to three grains with sugar, is one of the best alteratives.

Other alteratives, such as the hydrargyri sulphuretum cum sulphure*, Plummer's pill†, as likewise antimonials, with decoctions of guaiacum, sarsaparilla, sassafras, dulcamara, and mezereon, together with the Lisbon diet-drink (which is a combination of these), have likewise been much employed, but usually without any seeming advantage.

Chloride of barium is said to have been given in some cases of scrofula with success. The proper dose is from three to ten or twelve drops of the liquor barii chloridi twice a-day, according to the age of the person. Beyond a certain dose, it is apt to occasion sickness, tremors, and a loss of power.

The chloride of calcium, we are given to understand by Dr. Wood‡, has been much employed at the Newcastle Infirmary in lieu of the chloride of barium, and with two great additional advantages; viz. its action was more immediate, and no bad consequences attended an over-dose, while at the same time its efficacy was decisive. He used it at first in the form of crystals, by dissolving three grains in an ounce of water; but he found the process of crystallising the salt to be too tedious and difficult for general use, and that it did not possess any advantage over a fluid solution of the carbonate of lime in muriatic acid.

According to Dr. Pereira (p. 593.), it has been found most efficacious in the treatment of tabes mesenterica, on account of its checking purging, diminishing the hectic fever, allaying the inordinate appetite, and in many cases restoring the patient to perfect health. The liquor calcii chloridi of the London Pharmacopœia may be given in doses of from forty to fifty minims, gradually

* R. Hydrargyri Sulphuret. gr. xv.

Pulv. Antimon. gr. j. M.
ft. Pulv. nocte et mane sumendus.

† R. Pil. Hydrargyri Chloridi Comp. ʒij.

Divide in pil. xxx., capiat j. omni nocte.

* Take Black Sulphuret of Mercury, fifteen grains.

Antimonial Powder, one grain.

Mix them. Take this powder night and morning.

† Take Compound Calomel Pill, two drachms.

Divide into thirty pills, and let one be taken each night.

‡ See the Edinburgh Medical Journal, vol. i. p. 147.

increased to two drachms or more, until nausea is produced. The powers, however, of this medicine for good have not been universally admitted. According to Mr. J. Russel (*Treatise on Scrofula*, p. 85.), his colleague, Professor Thompson, had tried it in various cases of this disorder without deriving benefit in a single one, and the late Dr. Thomas's own experience of it led him on the same grounds to distrust its value.

Medicines of the narcotic tribe, but more particularly hemlock, have also been used for the cure of scrofula, both in the stage of swelling and that of ulceration. From my own experience of hemlock, as well as the report made of it by others, it appears, when administered internally, to prove often serviceable in discussing swellings of this nature; and it likewise appears, in some cases of ulceration, to have afforded relief by being employed externally, either in the form of poultice or fomentation, or both.

"In scrofula," writes Dr. Pereira, "in which disease Dr. Fothergill and many others have tried it, hemlock seems occasionally to be useful in irritable constitutions. It allays the pain and assists in reducing the volume of enlarged lymphatic glands, and in scrofulous ulcerations improves the quality of the discharge and disposes the sores to heal." Yet we are told, only in the preceding page, that its influence has so often failed to manifest itself, that a proper doubt has prevailed among practitioners of the present day whether it really exists; and Dr. Christison is quoted to the effect, that by far the greater proportion of the preparations hitherto employed have been of very little energy, and in the doses commonly used are absolutely inert. (*Materia Medica*, 1840, pp. 1067, 1068.) The dose of the extract should, at the commencement, be, for adults two or three grains, and gradually increased till some obvious effect is produced. The dose of the London tincture is half a drachm.

To enjoy the full benefit of the curative powers of hemlock, it will be necessary to give it to the full extent that the constitution can bear with impunity. The limit of the dose, therefore, is to be measured by its effect in producing incipient symptoms of giddiness or nausea, which disturb the functions of the head and stomach. The course requires to be continued many weeks, before the good effects of its operation are perceptible.

Lime-water and alkalis, as the sodæ carbonas, sesquicarbonate of ammonia, &c., are enumerated among the remedies often used in this disease, and administered, no doubt, under the supposition of an acid acrimony prevailing in the fluids. In some instances, a juncture of soda with cinchona, as also with sarsaparilla, has been attended with a very good effect.

In a small work* lately published, the successful treatment of several severe cases of scrofula by means of the internal use of caustic alkali, in doses proportioned to the age of the patient, with the external application of small quantities of mercurial ointment

* See *Observations on Scrofula*, by Mr. J. Brandish.

at the same time, and which are mentioned to have resisted all other remedies, is laid before the public. The annexed formula* is what was employed. The water is directed to be boiled in a tin kettle, adding the lime by little at a time; the whole being properly slacked, the pearl-ashes are to be put in, the mixture to be well stirred together, and then to be put into an earthen jar or pot well glazed on the inside, with a wooden spigot and faucet fixed in it to draw it off when wanted. The dose is a small tea-spoonful, or a draehm by measure, for children from four to six years old; one tea-spoonful and a half for those from six to eight; two tea-spoonfuls for those from eight to fifteen; and in the like proportion to those of more advanced age. The medicine is to be taken twice a-day in a little malt-tea, barley-water, or thin gruel.

This liquid, according to Dr. Pereira (*Materia Med.* 1849, p. 469.), is a solution of potash contaminated with some sulphate of potash, and chloride of potassium, so that probably the officinal liquor potassæ might be conveniently substituted for it in the same doses, as the latter preparation is somewhat the weaker of the two. Fresh small beer, or ale, is mentioned by this author as a suitable vehicle, to which a drop or two of oil of juniper may be added, in order to cover the saponaceous flavour.

The dose of burnt sponge is one draehm to three drachms, to be taken in the form of electuary or lozenges. But though this substance once enjoyed a high reputation, it has now fallen into disuse. Mr. Phillips writes, concerning it (p. 286.), "In all the cases, and they are many, in which I have had an opportunity of observing the effects of the medicine, I have never seen anything to satisfy me that it possesses any power over scrofulous swellings or the serofulous constitution." Dr. Pereira says that iodine is now almost invariably substituted for it. Of the specifics which have been largely employed in scrofulous diseases, there is none, perhaps, entitled to more confidence than the different preparations of iodine; nevertheless, it must be conceded that upon the whole they have disappointed the hopes at one time entertained of them. The iodide of potassium is the form now in most general use, and this substance we have been in the habit of prescribing in a dose of from one to three grains, according to the age of the patient, either in the compound decoction of sarsaparilla †, or in some bitter infu-

* ℞ Calc. Viv. Recent. ℥ij.
Ciner. Clavellat. American. lbvj.
—— Ligni Combust. ℥ij.
Aquæ Bullient. cong. vj. M.

† ℞ Decocti Sarzæ Comp. ℥iijss.

Potassii Iodidi, gr. viij.
Syrup. Sarzæ, ℥ss.

Solve. Summat cochl. j. amplum bis dic.

* Take Quick Lime, two pounds.
American Pearlashes, six pounds.
Wood-ash, two pounds.
Boiling Water, six gallons.

Mix them.

† Take Compound Decoction of Sarsaparilla, three ounces and a half.
Iodide of Potassium, eight grains.
Syrup of Sarsaparilla, half an ounce.

Dissolve. Let a table-spoonful be taken twice a-day.

sion, adding in either case enough syrup to render the medicine not very repulsive to children. Lugol's formulæ contain in every case a mixture of iodine, with iodide of potassium, in the proportion of one grain of the former to two of the latter, and this mixture may be given in much the same doses as the iodide alone, and in the same vehicles.* Much larger doses are, it is true, often given of the iodide, but we much doubt whether in any case an equivalent advantage is obtained; and we think that, in serofula more especially, it is by the long continuance of some gentle beneficial influence, rather than by anything like a *coup de main*, that we can hope to promote recovery. It is on this ground, among others, that we find Sir B. Brodie, in the treatment of the affections of the knee, the description of which we have copied above from him, advocating the use of the vinum ferri in preference to some of the more powerful chalybeate medicines.

Cod-liver oil (*oleum jecoris aselli*) has for the last few years been very extensively used in all diseases of a scrofulous nature, and enjoys, as we believe, a well-merited reputation for the benefits that it has conferred. "There is (writes Mr. Phillips, p. 287.) scarcely any form of serofula which I have not seen to improve under it: enlarged glands, sinuses, ulcers, lupus-like serofula of the face, caries,—all these I have known to get better under its employment. Yet, generally," he adds, "either the stomach or the patience failed before the remedy had been carried far enough to produce any considerable amelioration." We trust, however, rather to a varied than to a too uniform medication, in a disease of so untractable a nature as is serofula; and we think cod-liver oil well deserving to be from time to time resorted to, if it help us on our way so far even as, in the paragraph just quoted, it is admitted to do. The omission of all medicine for a time, or the intermediate use of some other, would probably enable us to resume it with renewed advantage. We cannot but think that, in medicine as in everything else, nature requires a change, and that they err in judgment who, having taken up some one favourite remedy (be it potash, or iodine, cod-liver oil, or steel-wine), satiate and saturate their patients with

Vel,
 ℞ Infus. Calumbæ, ℥iijss.
 Potassii Iodid. gr. viij.
 Syrup. Aurantii, ℥ss.
 Solve. Sumat cochl. j. amplum bis die.
 * ℞ Iodinii, ℥j.
 Potassii Iodidi. ℥ij.
 Spiritus Vini rectificati, ℥v.
 Macera donec liquentur, et cola.
 (Tinctura Iodini, Composita Ph. L.).
 Dosis sit m̄v. ad ℥s. ex Vino Xerico, vel
 quovis vehiculo idoneo.

Or,
 Take Infusion of Calumba, three ounces
 and a half.
 Iodide of Potassium, eight grains.
 Syrup of Orange-peel, half an
 ounce.
 Dissolve. Let a table-spoonful be taken
 twice a-day.
 * Take Iodine, one drachm.
 Iodide of Potassium, two drachms.
 Rectified Spirit, five ounces.
 Macerate till they are dissolved, and strain.
 (Compound Tincture of Iodine, of the
 London Pharmacopœia.)
 Dose, from five minims to half a drachm in
 Sherry Wine, or any suitable vehicle.

unceasing and ever-increasing doses of it. Cod-liver oil may be given to children in doses of a tea-spoonful twice or thrice a-day; one child that we know of takes it with a little orange wine; others do not object to it in its natural state. To adults sometimes we have given it alone, sometimes diffused in some bitter infusion, or aromatic water; and the addition of a little acid, as lemon juice, or a dilute mineral acid, has seemed sometimes to render it less unpalatable. In the Pharmacopœia of the Hospital for Consumption are two formulæ for its use: in the one, two drachms of the oil are suspended by means of a scruple of compound tragacanth powder, in six drachms of anise water, as a dose; in the other, ten minims of potash water, with the same quantity of oil as before, and six drachms of peppermint water, are made into an emulsion. With adults the dose may be rapidly increased to half an ounce or more, yet we have generally thought it best to begin with a drachm. We have no objection to the continued use of the medicine so long as the patient appears to thrive upon it, and this period may in some instances endure for many months; when the improvement ceases to be progressive, to resort to other means seems a more rational plan than to urge these more vigorously. In lupus, eczema, and other cachectic eruptions, and in scrofulous affections of the periosteum, it has proved eminently useful.

Many, if not all, of the remedies above enumerated were at one time believed to have a specific power in preventing or eliminating the proximate cause of scrofula; but, notwithstanding their boasted success, distrust has arisen in the minds of medical men of the very principle of their supposed action. The idea of curing diseases has of late years lost much of the hold which it once had upon us; and, with a wise humility, we appreciate natural workings more, and our own interferences less. If in continued fever it be admitted that we can do little but wait and watch, and uphold and assist nature in carrying on those processes by which health is to be restored, the same principle of action should probably also guide us in the treatment of the malady under discussion, in which not a part only, but the whole system is affected, and actions are set up for the elimination of morbid matters, which, when once deposited, like other unorganised bodies, are removed from the direct action of medical agents. Hence, to remove the conditions under which the blood has become deteriorated, by proper food, and air, and clothing and exercise, and to impart fresh vigour to every organ of the frame by recourse to tonics, is more likely to prevent successive similar deposits, and to assist in the great work of elimination and reparation, than any measures directed against those deposits themselves.

To invigorate the constitution, it will be necessary in the cure of scrofula to employ such medicines as are supposed to impart strength to the body. Of the vegetable class, the cinchona is the most esteemed; but previous to its use, and to ensure the full benefit from it, the bowels must be cleared of any morbid accu-

mulation of fæces. The cinchona seems, however, best suited to those cases where there are extensive ulcers or large abscesses, with copious exhausting discharges of purulent matter; and, in general, to communicate that degree of energy to the actions of the system which tends to support and confirm the patient's strength. Young children will generally take even bitter medicines if sufficiently sweetened; and a form which we have often used with advantage in those labouring under scrofulous eruptions, or threatened with other varieties, contains three ounces of the decoction of bark, with half an ounce of the tincture, and as much syrup of sarsaparilla, together with two scruples of sesquicarbonate of soda. Of this mixture, from two drachms to an ounce, according to the age, should be given thrice a-day, while the bowels are regulated by an occasional laxative, either of castor oil, or of some mercurial purgative, as the state of things may seem to require.

If none of the preparations agree with the patient, or we wish after a time to change the medicine, some of the other vegetable tonics, such as the sulphate of quinine, calumba, cascarilla, gentian, myrrh, &c. (for various formulæ of these, see Intermittents and Dyspepsia), may be given; and, to add to their efficacy, we may conjoin some agreeable aromatic, such as the *tinctura cardamomi*, or *tinctura einnamonis composita*.

Of the mineral tonics, iron and the sulphuric and nitric acids are most valued for their virtues in the cure of scrofula. The latter are palatable, grateful to the stomach, and agree with all forms and stages of the disease, being peculiarly adapted to that state of fever which is connected with the putrid sloughs that are often formed on the inside of large tumours when first exposed to the air, and to that state of weakness which disposes to copious perspiration upon any moderate degree of exercise. Dr. Mossman informs us * that he found muriated barytes and the nitric acid to increase the appetite, and impart vigour to the system; but he never saw them exhibit any beneficial effect on the morbid glands. A few drops of either of the acids may be given with each dose of the cinchona, or other vegetable tonics. Of the preparations of iron, sesquioxide, *vinum ferri*, and muriated solution have been found efficacious. We may give doses of these, proportioned to the age of the patient, twice or thrice a-day.

Several elegant preparations of iron are of somewhat modern introduction into medical practice. Of these we may mention the ammonio-tartrate and ammonio-citrate of that metal, or, as they are called, and we believe more correctly, by Dr. Pereira, the ferrico-tartrate and ferrico-citrate of ammonia. These compounds, it is true, want the astringent properties of some, and are less powerful than many, of the other combinations; but they have the

* See his Essay on the Nature, Origin, and Connexion of Scrofula and Glandular Consumption.

advantage of being destitute of any unpleasant flavour, of less frequently disagreeing with the stomach, and of not undergoing decomposition when administered with the carbonates of the alkalies. If from half a drachm to a drachm of either of them be dissolved in an ounce of water, to which half an ounce of syrup of orange-peel is added, we have a medicine of which a drachm may be given twice or thrice a-day. A more powerful tonic exists in the citrate of quinine and iron, of which about half the quantities just mentioned may be dissolved in the same vehicle, the dose being the same as before. The iodide of iron is another preparation deserving a trial by those who desire the conjoint action of its constituents. A grain of the compound may be given in diluted syrup as before, this being its best vehicle. Care must be taken that it has not undergone decomposition prior to use. Or the syrup of iodide of iron may be substituted in doses of from twelve minims to a drachm, diluted with distilled water when used. An elegant artificial chalybeate, described by Dr. Pereira, is formed by triturating together ten grains of sulphate of iron, and as much sesquicarbonate of soda; dissolving the powder in a tumblerful of soda water, and drinking it in a state of effervescence. The saccharine carbonate of iron of the Edinburgh Pharmacopœia may be given in doses of from five to ten grains, and is recommended to us from its active principle, being in the same state as in the deservedly popular Griffith's mixture.

During the use of tonics, a few grains of rhubarb, with one or two of the submuriate of mercury, may be given now and then.

Mineral waters of the sulphureous and chalybeate class may likewise prove serviceable in the treatment of the disease under investigation.

The Malvern water and air were considered by the late Dr. Bailey as most useful remedies.

We have quoted above the opinions of two very eminent surgeons of the present day, very decidedly expressed against the employment of any but the simplest local means in the treatment of serofulous affections of the bones; and we think the reasonings on which those opinions are founded have an application beyond the particular affections of which they speak, namely, to serofulous glandular enlargements also. Hence we omit those lengthened details of local measures which existed in the former edition of this work, and only suggest a few applications or plans of treatment, which, if, as we believe, they can effect little good, are at least incapable of harm, and may at least serve to satisfy the impatient anxiety of friends.

In some rare instances, a few leeches may be applied where more than ordinary heat and pain and redness warrant an expectation of relief from them; and, if this be experienced, they may, under similar circumstances, be occasionally repeated. Cold and astringent applications may be used in the earliest stage, while we may suppose that as yet there is no change in the affected parts

beyond increase of vascularity. Warm fomentations and poultices will suit better for the removal of tension and relief of pain, if present, when there is reason to believe that serofulous deposit has taken place. But, in truth, in serofulous affections, pain and tenderness are generally absent or very slight; and poultices and fomentations wholly useless except as placebos. To use frictions for the discussion of indolent tumours, and so to cause irritation where it was before absent, seems to us warranted neither by theory nor by experience. Mr. Phillips says (at p. 303.) that, if a deposit of serofulous matter have taken place in one or more glands, it cannot, he believes, become absorbed; either it may become quiet and cease to irritate, assuming a calcareous character, and remaining dormant for years, or it may cause suppuration and escape externally: but, he adds, of twenty cases of glandular enlargement, scarcely one will go on to suppuration.

Over the changes to be effected in the deposit, medicine has no certain power; its best aim is to make neighbouring structures tolerant of its continual presence, and this, as regards local treatment, is more likely to be accomplished rather upon a soothing than an exciting plan. Hence we should proscribe frictions and also the so-called counter-irritants, which are prone, we think, to excite rather than to withdraw irritation from structures immediately contiguous with the place of their usual application. If any one have faith in what has been called epidermic medication, mild mercurial or iodine ointments may be applied by gently smearing them over the affected part; or plasters may be applied to give support to the vessels, and to promote cutaneous action, by such as trust in the benefits resulting from these effects; or medicated plasters may be worn to give the chance of specific benefit from the active ingredient: and any or all of these means may possibly be serviceable, and will be harmless, provided we avoid or discontinue all applications that occasion deep-seated pain.

As regards epidermic influences, we have tried to show, in our article on Poisons, that the chance of any substance being absorbed into the system is diminished by its exhibition in a state so acrid as to interfere with the natural actions of the skin. If vesication be produced, or the cuticle destroyed, as by strong tincture of iodine, there is little more reason to expect its absorption when so applied, than there is to see vomiting arise with the pustules caused by tartar emetic ointment, or purgation with the pimples following the application of croton oil.

In our view, therefore, ioduretted ointments should be mild, in order to favour their action by absorption. The parts over the enlarged glands or masses may be smeared from time to time with mercurial ointment, strong or diluted, with ointment of iodide of mercury, with the compound iodine ointment of the London Pharmacopœia, or with that of iodide of lead, or may be painted over with the compound tincture of iodine. Or, again, they may be covered with lead or soap plaster spread on leather; or with the

plaster of ammoniacum and mercury, with that of mercury, or those of belladonna or opium, according to the indication which the practitioner aims at fulfilling. Some have faith in the application of sea-water to scrofulous swellings. Sir B. Brodie considers, when speaking of the knee-joint, that sea-water and sea-bathing are probably only beneficial inasmuch as the patient must be at the sea-side and have sea air while he resorts to them. Cloths dipped in sea-water, or fomentations with sea-weed, may be allowed among the other innocent pastimes of impatience.

Where the process of suppuration is sufficiently advanced, the contents of the abscess are to be evacuated by a lancet at once, if the collection be not large; if otherwise, by repeated puncture at proper intervals; and the access of external air prevented by careful closure of the orifice, similar to what has been long practised by the most skilful surgeons in the treatment of lumbar abscess.

To correct the discharge, repress or destroy any luxuriant fungous growth, promote a proper suppuration, and dispose the ulcers to heal, it is usual to employ gentle escharotics, such as the hydrarg. nitrico-oxydum, verdigris, and burnt alum, which may either be sprinkled over them, or be applied mixed up with some mild ointment, as the unguentum ceræ. Where there is a languid action in any sore, which suspends its progress towards amendment, and renders it stationary, the use of gentle stimulants will be proper. A solution of the neutral or metallic salts, as the muriate of ammonia, oxymuriate of mercury, nitrate of silver, or the sulphate of zinc, will stimulate the ulcer to shoot forth granulations. A solution of the latter, in the proportion of from half a drachm to one drachm to about eight ounces of water, is considered by Mr. Goodlad* to be the best application that can be made to scrofulous sores that have suppurated and opened.

Scrofulous abscesses have been punctured, and the cavity afterwards injected with a solution of the sulphate of zinc, in the proportion of about eight grains of the latter to an ounce of the former, with the best effects †, as healthy inflammation has supervened, which terminated in adhesion, without any return of the complaint.

The application of linen cloths dipped in cold water, sea-water, or lime-water, and renewed as frequently as they become dry throughout the course of the day, with that of some mild plaster or ointment, such as the ceratum plumbi acetatis, spread upon fine lint, by night, is a mode of treatment much recommended in scrofulous ulcers. Mr. Critchett considers black wash an excellent application. (p. 101.)

If these fail in healing the ulcers, linen rags may be moistened with a solution of two drachms of the plumbi acetatis in a pint of

* See his tract on Scrofula.

† See Practical Observations on Surgery, by Mr. J. Howship.

water, from which application I have seen very good effects derived. Dr. Darwin used powdered oak-bark mixed with white lead; but the practice is dangerous.

Scrofulous ulcers which had resisted many other remedies have healed under a weak mixture of nitric acid and water.

In sores which are spreading and highly irritable, the application of an aqueous solution of opium or of hemlock, and afterwards of a solution of zinc, may be beneficial.

Where the granulations rise above the surface, and are broad and flabby, and where pressure cannot be applied, the sorrel poultice has proved useful. The topical employment of bruised sorrel leaves (*rumex acetosa*) has been strongly recommended, as contributing very much to the cicatrisation of indolent scrofulous ulcers.

In sores of an ugly, gleetng, and ill-conditioned appearance, much benefit has been obtained by the application of a poultice made with crumbs of bread, moistened with a solution of about an ounce of the crystals of soda in a quart of water.

Borax, in the proportion of half a drachm or one drachm mixed in an ounce of unguentum cetacei or ceratum calaminæ, has been found a useful and efficacious application to scrofulous ulcers; and by such dressings they have frequently been healed in a short space of time, after having resisted other modes of treatment.

Painful and deep-seated ulcerations, the consequence of a scrofulous habit, and which are attended with much local irritation, have been relieved by a use of the Malvern water. Applied to the sore, it moderates the profuseness of the discharge, corrects the fœtor which so peculiarly marks a caries of the bone, promotes the granulating process and a salutary exfoliation of the carious part; and, by a long perseverance in this course, very dangerous and obstinate cases have at last been entirely cured. Inflammation of the eyes, especially the ophthalmia, which is so troublesome in scrofulous habits, often yields to this simple application.*

It has already been observed, that diseases of the vertebræ, which, in consequence of the softness of their bodies, occasion a protrusion of their spinal processes and a compression of the medulla, are frequently connected with scrofula. In such cases, Mr. Pott depended principally on a drain by issues applied on each side of the projecting spinal process; and, in some of them, successfully treated in this manner, confinement to a horizontal position was unavoidable. Sir James Earle, fully aware that issues were ineffectual unless the superincumbent weight was removed from the morbid part, and objecting to the horizontal position from its being irksome to the patient, "weakening and relaxing, and consequently retarding the cure," as he expresses it, endeavoured to substitute a mean betwixt a confinement on

* See Dr. Saunders's Treatise on Mineral Waters.

a couch and the pressure from an erect position. He, therefore, recommended and employed a form of machinery which would take off the incumbent weight from the diseased vertebræ and transfer it to the pelvis. Mr. Baynton* (who is also a writer on diseases of the spine), having compared the opinions and practice of Mr. Pott and Sir James Earle, and from facts collected from the writings of other surgeons of eminence, has been induced to conclude, that a system of resting in a horizontal position, regulated by scientific principles, will accomplish the cure of diseases of the spine, after the failure of drains and machinery, steadily continued a number of years under the direction of skilful surgeons; and, to substantiate the efficacy of the mode of treatment which he advises, he has recited the history of some cases which fell under his care. He is induced to suppose that the success which attended the cases treated by Mr. Pott, by issues made with caustic, conjoined with a horizontal position during the greatest part of the cures, as the patients could not bear to remain upright, was more owing to the uninterrupted rest they enjoyed than to the effects of the drains from the neighbourhood of the diseased portion of the spine.

Great doubts have indeed been entertained by other practitioners respecting the efficacy of caustics in caries of the spine; and they have recommended in their stead occasional cupping, repeated blisters, aperients, the muriate of lime, a milk diet, and long-continued repose in a horizontal position, and particularly at the commencement of the disease.

Where an abscess has formed near the spine, an issue should, however, instantly be established on that side of the vertebræ which is opposite to where the matter issues from.

An able work on the nature and treatment of the distortions to which the spine and bones of the chest are subject, has been submitted to the public by Mr. Shaw, in which he notices the various kinds of stays and collars that have been usually employed in such distortions, together with a use of the inclined plane; all of which he condemns, and trusts the cure principally to exercise, so contrived as to call into action those muscles which have a tendency to counteract the deformity: but for these we must refer to the work itself, as, without the assistance of the diagrams and plates in illustration of Mr. Shaw's mode of treatment, it is nearly impossible to convey a correct idea of it to our readers.

Admitting, as we do, the justice of the principles of treatment advocated by Mr. Shaw in certain classes of curvature of the spine, as where this deformity is dependent on unequal yielding of softened vertebræ, on relaxation of ligaments, or unequal action of muscles, we conceive that these principles have no application to cases in which there has been actual loss of substance from scrofu-

* See his Account of a successful Method of treating Diseases of the Spine.

lous ulceration of the vertebræ. A consideration of the nature of disease, and of the mode in which recovery can alone take place, gives additional weight to the recommendation of Mr. Stanley, as far at least as this disease is concerned, when he says (p. 319.), "One rule of treatment belongs to all diseases of the spine, namely, to keep the diseased parts at rest, and to remove from them all weight and pressure, by observance of the horizontal posture. And when ulcerative disease is seated, as it is almost constantly, in the bodies of the vertebræ, no restraint of position is to be imposed that can impede the approximation of the healthy vertebræ bounding the seat of the disease, as this would be to put an obstacle in the way of the only process of cure of which the disease is susceptible."

Far less anxiety appears, at present, to exist, among surgeons of the first class, about the early opening of abscesses, than was formerly entertained. Thus Sir B. Brodie, in his lecture already quoted, says (at p. 491.): "When the abscess presents itself externally, and the skin over it is tender, the splint which presses upon that part must be left off; as soon as the skin becomes thin, open the abscess; you will save time by doing so." It appears, therefore, that even in the peculiar case of the knee-joint he speaks of the artificial opening as expedient, rather than necessary. Mr. Stanley goes much further; and considers the opening of psoas abscess as inexpedient, except in cases where it is clearly about to make an opening for itself. After mentioning (at p. 329.) that, in a large proportion of cases, psoas abscess is accompanied by scrofulous disease of the vertebræ, he shows (at p. 329.) that, in certain rare instances, recovery takes place without any discharge of the matter, which is at first walled in, so as to cause little irritation, and becomes converted, at a distant period, into a substance resembling adipocire; while, in more numerous cases (p. 335.), the disappearance of the abscess may take place by the absorption of its contents. And he then remarks that these considerations lead irresistibly to the conclusion of not opening either an iliac or a psoas abscess, until it is just about to burst, when, either for the relief of the painful distension of the integuments, or to prevent the ulceration of them, the opening may be expedient. We may remark that, for promoting this spontaneous cure by absorption, he insists only on such measures of diet, medicine, and general management, as will impart strength to the system. Issues, he had before stated (at p. 330.), to be productive of no benefit, after the formation of psoas abscess; for the suppuration of the abscess has already withdrawn all irritation from the spinal chord.

On the subject of the treatment of suppurating glands, Mr. Phillips says (at p. 304.): "The rule, I conceive, is clear enough, that, unless ulceration be inevitable, the surgeon should not interfere either with the caustic, or the cutting instrument; but the embarrassing point is, the solution of the question whether ulcera-

tion be inevitable. Every surgeon has seen collections of fluid, where the integuments were thinned and purpled, suddenly shrivel up and be absorbed; but no one can say what may happen in any particular case."

DISEASED MESENTERIC GLANDS.

CHILDREN of a scrofulous habit are very often affected with a diseased state of the mesenteric glands; the little patient usually complaining of a deep-seated, lancinating pain within the abdomen, which gradually enlarges, while the other parts of the body are emaciated. The state of the bowels is variable, though more commonly relaxed than otherwise. When they are relaxed, the stools have a chalky appearance, and seem as if the chyle had been rejected by the lacteals, and left in the form of a milky fluid in the intestines. Such, at least, is their nature, according to Dr. Young, and most of the older authors; and such we believe it to be, when most characteristic. Another peculiarity is, that they are, in proportion to the size and age of the patient, very copious; and they are, at times, frothy, in which case they more or less nearly resemble yeast; but we doubt the accuracy of the statement that they consist of frothy mucus.

Although the appetite is tolerably good, nay, often voracious, in children whose mesenteric glands are thickened and diseased, neither health nor strength result from it; the more food that is taken the worse is the child generally, as it oppresses, without nourishing, the system. Until the obstructions are removed, no healthy action can, therefore, take place.

In the advanced stage of the disease the child is fretful, peevish, and inactive. There is usually an accession of fever towards the evening, the pulse being at that time generally about 120, while at other times of the day it is seldom less than 100 in a minute. There is but little thirst, and the tongue suffers no change, except, perhaps, being now and then streaked with white at the sides. The skin is dry to the touch, and rough, and the cuticle is not unfrequently thrown off in scales.

The certain diagnosis of *tabes mesenterica*, however easy it may have been esteemed by the older authors, is allowed, by the most modern, to be at all times difficult, and, in its earlier stages, even impossible.

"The mesenteric glands," say MM. Rilliet and Barthez (vol. iii. p. 411.), "placed deep in the cavity of the abdomen, covered by the intestines, and the walls of the belly, can be felt only in cases in which they have become considerably enlarged, and even then they often elude a careful examination. Besides, the functional disturbances which they cause are so little marked, and belong to so many different maladies, that the derangement of the digestive canal can ill supply the diagnosis. The general symptoms are

those of consumption; but they seem to us far less marked when the tuberculation is concentrated in the mesenteric glands; whence arises a new cause of error, and of difficulty in forming a correct diagnosis."

"It is impossible," they say, a little further on, "to recognise the malady at its commencement." "There is no symptom," writes Dr. West (p. 423.), "pathognomonic of tubercle in the mesenteric glands, except their being perceptible through the abdominal parietes, and this they never are in the early stage."

In an advanced stage, if the distension of the superficial abdominal veins is considerable, and they unite with the veins of the chest, we should suspect the presence of a tumour in the mesentery, provided there be neither morbid enlargement of the liver, nor the tenderness and other symptoms of chronic peritonitis. Some anasarca of the feet is also an occasional accompaniment of this disease, near its fatal termination; and slight effusion of fluid in the abdomen is, we think, not unfrequently observed during its course.

This diseased state of the mesenteric glands is to be distinguished from enteritis by there being no vomiting, or difficulty in procuring evacuations with the ordinary quantity of medicines, and but little pain being perceived on pressure; and it may be known, from the febris infantum remittens, by its more chronic course, and more obstinate resistance of treatment. In chronic or tubercular peritonitis, there is greater tenderness on pressure, and much greater tension. In the exceptional cases, in which the enlarged glands can be felt through the walls of the abdomen, their situation in front of the spine, and at about the level of the navel, as well as their unequal figure, will prevent our being misled by any tumour due to increased size of the liver or spleen; while the permanence of the tumour excludes the error which might arise from feculent matters in the intestines, which last disappear after free evacuation of the bowels.

The disease is now ascertained to be of far less frequent occurrence than it was formerly believed to be; many different affections were, then, probably confounded with it. "If," say MM. Rilliez and Barthez, "we give the name of *tabes mesenterica* to a tubercular deposit in these glands of small extent, this disease will be frequent; since we have found tubercles in the mesentery of nearly half the children affected with tubercle. If, on the contrary, we regard as labouring under this malady only those in whom the deposit in the mesentery has been considerable, the number will amount only to one-seventh of that obtained in the former supposition, and only to a sixteenth of the number of those that have tubercles in some part or other." (p. 406.)

The occasional conversion of the tuberculous matter into calcareous masses has been insisted upon by Dr. Carswell, in illustration of the existence of a natural process of cure; and the authors quoted above admit its curability in this way. Hence it

happens that the prognosis is less unfavourable than in cases of tubercular deposit in other organs, as in the lungs, or bronchial glands, or on the surface of the peritoneum. In truth, the danger of the malady must be estimated rather by the complications which co-exist with it, than in reference to its own intensity. Of the ordinary complications, tubercular deposits within the peritoneum or chest are those of the worst import, and must render the prospect almost or altogether hopeless.

The disease rarely or never attacks children under three years of age, is most common in those between five and ten years old, and is very unfrequent between the twelfth and fifteenth years; boys are much more subject to it than girls. A considerable number of children have tubercles in the mesentery, without presenting in the intestines either tubercles, or tubercular ulcerations or scars; so that in these, at least, the deposit in the mesentery may be independent of any in the intestines. When tubercles are found in both these structures, sometimes the glands are much more affected than the intestines, and their tuberculisation has evidently been the first in the order of time; but the reverse is more frequently observed, in which the deposit in the glands is subsequent to, and dependent on, that of the intestines. We think, too, that in some cases we may consider intestinal inflammation as a cause of the tuberculisation of the mesenteric glands, to which the lacteals of the mucous membrane run. (Rilliet and Barthez.)

The predisposing causes of mesenteric disease are the same conditions of hereditary taint, and of deficient or improper food, and unhealthy residences, as conduce to the formation of tubercles, or to the development of scrofula in general. (See *Scrofula*.)

The first indication of treatment in a suspected case of tabes mesenterica is, to simplify the malady as far as possible, by restoring the natural action of the intestines, and the healthy functions of the skin; and this has appeared to us to be best effected by a purgative of calomel, with jalap or rhubarb*, given on alternate days, while small doses of ipecacuanha, and tincture of opium †, are, at the same time, given with the view of abating

* ℞ Pulv. Radic. Jalap. vel Rhei, gr. vij.

Hydrarg. Chlorid. gr. j.

Misce fiat pulvis alternis auroris ex saccharo sumend.

† ℞ Pulv. Radic. Ipecac. gr. iv—vj.

Mixtur. Acaciae, ℥j.

Syrup. Croci, ℥jss.

Aquæ puræ, ℥ixss.

Potassæ Nitræ. gr. xij.

Tincturæ Opii, m℥vj—x.

Misce. Sumat Cochli. ij. minima, i. e. sextam partem, ter die.

* Take Powdered Jalap or Rhubarb, seven grains.

Calomel, one grain.

Mix for a powder, to be taken in sugar on alternate mornings.

† Take Powdered Ipecacuanha, four to six grains.

Mixture of Gum Arabic, a drachm.

Syrup of Saffron, a drachm and a half.

Water, nine drachms and a half.

Nitrate of Potash, twelve grains.

Tincture of Opium, six to ten minims.

Mix, and let a sixth part be taken thrice a-day.

pyrexia, and soothing constitutional irritation. It is only when these measures have effected all that we can hope to obtain from them, that we have recourse to alteratives, specifics, or tonics. In our prescriptions we suppose the patient to be about four years old; in other cases they must be modified to suit the age.

The occasional use of the warm bath on alternate nights, or twice a week, before going to bed, will assist in restoring a healthy state of the skin. If under this plan of treatment, accompanied by a mild nutritious diet, consisting, for the most part, of milk and farinaceous food, with a moderate allowance of animal broths, the pyrexia abate or cease, we may then have recourse to any of the numerous tonics spoken of under the head of *Serofula*, of which we consider the decoction and tincture of bark, with soda and a little syrup, one of the best, a small dose of laudanum being added if the bowels are still irritable. The continuance of the powders with the same frequency as before, or only twice a week, has seemed to us to diminish the risk of a return of pyrexia, and to aid the progress of the ease more surely than when these are at once omitted. In some cases, however, a drachm, or a little more, of castor oil has been substituted, with the same frequency, and with equal or greater advantage. If, after a sufficient trial, the purgative and ipecacuan. mixture appear too depressing, mild alteratives should take their place; the mixture, however, has a good effect in relieving the cough and pectoral symptoms, which are often present. As alteratives, two or three grains of Dover's powder, with as much of the hydrargyrum eum creta, and two grains of sugar, may be given, with the further object of procuring rest at night; while the cod liver oil, in doses of a drachm, may be taken twice a day. At a later period, if restlessness at night have ceased, the powders should be omitted; and other tonics, as the decoction of sarsaparilla, with or without a grain of iodide of potassium, may be substituted for the cod liver oil, or some of the various mild preparations of iron enumerated in the article *Serofula*. Where there is continued irritability of the bowels, the use of equal parts of milk and lime-water as a drink is often very serviceable; and this may be rendered more palatable by the addition of a little sugar, and a slight flavour of cinnamon, or, if it need be, of a little brandy. Lime-water, it is now well known, has a beneficial influence on the secretion of the kidneys, which is often acrid from concentration, or excessive acidity, when the intestinal canal is irritated. Frictions with weak iodine ointments may be employed on the abdomen, by those who have faith in them, but we are sceptical as to their benefits. The diet should be improved with the favourable progress of the case; at all times, however, it should be plain and unstimulating, though nutritious, and care must be taken not to overload the stomach by an excess of quantity. The same preventive measures are suited to this as to other forms of *serofula*.

Exercise in the open air should be especially recommended;

and as that of the sea usually proves beneficial to such patients, where a residence near the coast is practicable, it should be adopted. When the disease gives way, and a decided diminution of the fever, pain, and enlargement of the abdomen, has taken place, we may recommend sea-bathing; at first with a bath heated to about 80°, and so reduce the heat gradually, until at last the patient can safely bear the sea-water at its usual temperature. If it should be winter, the water may be heated to about 65° or 70°.

SYPHILIS, OR THE VENEREAL DISEASE.

THE part of the world where this disease first originated has been much disputed, some looking upon it as of French extraction, and others supposing it to have been brought from America by the soldiers of Christopher Columbus. Be this as it may, it is certain that it was first observed at the siege of Naples in the year 1493, and that from thence it spread very rapidly throughout France, Spain, Germany, and other kingdoms.

The syphilitic poison is peculiar to the human species, and produces no effect whatever on any of the brute creation, as has incontestably been proved by repeated experiments: whence we might infer that it was intended, not only as a check against any deviation from the rules of connubial chastity, but likewise as an incentive (if I may be allowed the expression) to the gay and young, to form, at an early period of life, a satisfactory and honourable alliance, by which they may be enabled to gratify the passions implanted in them by nature, and propagate the species, without the risk of disease.

Some practitioners of the present day go so far as to doubt the existence of this virus, and even deny the specific power of mercury.

Syphilitic poison cannot, as happens in other eruptive complaints, such as the small-pox, measles, &c., be conveyed in the form of vapour, or, in other words, by breathing air which is contaminated by a person labouring under it. To give rise to syphilis, it is necessary that the matter or poison should be applied to some part which is soft or covered with a mucous membrane, or else to some place where there exists either an excoriation, ulcer, or wound.

It has been doubted whether it is possible for the disease to be communicated from the mother to the infant *in utero*. However rare such an occurrence may be, still it is very possible, and many well-authenticated cases are on record to substantiate the fact.

Venercal matter is always sure to occasion a conversion of the mucus of the part, or of the fluids of the wound or ulcer to which it has been applied, into matter similar to itself; and when a sufficient quantity has been produced, it excites an inflammation

in the mucous membrane or glands, or in the wound or ulcer, and is then absorbed into the system, but very seldom before. Instances have indeed occurred in practice where absorption has taken place without any apparent effect of this kind being produced: they are, however, very rare.

The infection is almost always sure to show itself first in that part to which the matter is applied; and as syphilis most generally arises in consequence of an intercourse between the sexes, so the symptoms usually show themselves first in or about the organs of generation. Where a child at the breast communicates the contagion to its nurse, her nipples and breasts will be the parts first affected; and on the contrary, where it is the nurse that infects the infant, then its lips and other parts of its mouth will show the first symptoms of the disease. In like manner, if the infection is conveyed to an accoucheur, in consequence of having a slight scratch on any of the fingers of the hand with which he officiates, the wounded part will show the first appearance of the disease by becoming inflamed; soon after which the glands in the axilla of the same side will swell, be painful, and indurated.

Syphilitic matter, by being applied to the body, produces in the course of time either a local or a constitutional disease. By the former is meant an affection confined solely to those parts to which the poison was first applied; and by the latter is to be understood a general taint of the whole system and mass of fluids. Syphilis is therefore generally sure to show itself in both sexes, either as a local affection under the form of a gonorrhœa or chancre, or else as a constitutional one, under that of confirmed lues venerea.

We shall speak presently of the now ascertained fact, that gonorrhœa and syphilis are diseases of a totally different nature. The former is at all times a local affection and nothing more, giving rise to no proper secondary or constitutional symptoms. The latter is now commonly described as presenting primary rather than local symptoms, while the constitutional consequences are spoken of as secondary and tertiary. It is not merely a question of words, whether we call a chancre a primary or only a local affection; the latter term is objectionable as implying the early limitation of the disease to the spot in which it first shows itself, which limitation, if by some it be considered probable, has not nevertheless been placed beyond the reach of doubt. The more usually received hypothesis, (writes Dr. R. Williams in 1841, in his *Treatise on Morbid Poisons*,) or that the poison is immediately absorbed even by a sound surface, and the primary sore only the first indication of the contamination of the system, is supported on much stronger grounds, and by a stricter analogy with the laws of other poisons. The author refers to the experiments of Bousquet upon vaccination as confirmatory of, rather than opposed to, the constitutional origin of the primary syphilitic sore. Since it was shown, that after the insertion of the vaccine virus the disease

runs its course, notwithstanding the most active means, as cauterization, have been taken to prevent absorption, and the frequent failure of similar means employed upon primary sores in arresting the specific disease, is a still weightier and more direct argument against their purely local character. Again, we find that Mr. Ricord, after stating that sulphuric, nitric, hydrochloric, and acetic acids, and the pure chlorides, mixed with virulent pus have constantly prevented it acting by inoculation; adds in the next paragraph, but if these substances have been considered as prophylactics, it must be understood that the results only followed when the mixture was made before or at the instant of inoculation; how surely this statement affords a presumption that a more than local infection speedily arises.

Between a primary and a constitutional affection there are, however, certain appearances which are apt to take place in the absorbent vessels and glands nearest the situation to the parts affected with ulceration, and produced, no doubt, by the passage of the venereal matter through them. When the former become affected, a hard, red, inflamed line, somewhat similar to a cord, may be felt running all along the back of the penis; and when the latter are affected, which more usually happens, an induration, swelling, and inflammation of the glands themselves will take place, and a bubo will be the consequence. As in most instances the matter is applied first to the part of generation, in consequence of an intercourse between the sexes, so, of course, the glands of the groins are most usually the seat of this symptom.

By a gonorrhœa virulenta, or clap, is to be understood a secretion and discharge of matter from the mucous membrane and glands of the urethra, in consequence of the application of gonorrhœal matter to them. By a chancre is meant a venereal ulcer, the nature of which is, to be much inflamed, to be very sore and painful, to be unequal at the bottom, to have prominent edges of an ash colour, and to show no kind of disposition whatever to heal when left to itself; but, on the contrary, to spread very much: and by a lues venerea is implied an affection of the whole habit and mass of fluids, in consequence of an absorption of the poison into the constitution, which produces certain effects on various parts of the body while diffused in the circulation.

Although a gonorrhœa and chancre are both of them local affections on their first appearance, still there is this material difference between them, that as in the first there is a formation of matter without any breach in the solids, and in the latter there is always a breach, so the first may go on for some time without degenerating into an affection of the whole system, and may at last effect its own cure; whereas the latter is never attended with this happy effect; but, on the contrary, affords great reason to fear, that in those cases where the virus is not corrected by a timely use of proper antidotes, an absorption of the matter will take place, and in due time give rise to a confirmed lues.

More recent experience has shown that syphilis as well as gonorrhœa admits in some instances of a spontaneous cure, or has a tendency at an earlier or later stage of its progress to wear itself out. This we assert as an admitted fact, on the authority of our friend Mr. T. B. Curling, who has kindly allowed us to make use of his manuscript lectures in the compilation of the present article. It is matter also of general belief, that where secondary symptoms have followed a seeming gonorrhœa, that the discharge has been occasioned by a chancre concealed either in the urethra of the male, or about the cervix uteri or deep seated parts in the organs of generation in the female. To sores thus hidden from view, the name of masked chancres (*chancres larvées*) has been given by recent writers, and the discovery of their not infrequent occurrence has explained some anomalous phenomena previously observed. In this way we can readily account for the production of chancre in a healthy individual, in consequence of intercourse with one labouring apparently under a simple gonorrhœa. Moreover, as a true gonorrhœa may co-exist with chancre whether masked or otherwise, we can explain why the same infected female may communicate one or other or both of these diseases to her acquaintance. This explanation, also, if it be admitted, removes entirely the grounds upon which the identity of the poisons of gonorrhœa and syphilis has been supported; an hypothesis, which has been entirely disproved by the numerous experiments of Mr. Ricord and others, who have shown that the matter of chancre in the stage of ulceration is invariably capable of producing by inoculation a sore like that from which it was taken; whereas that of a true gonorrhœa has no such property, giving rise only to a gonorrhœal discharge when kept in contact with mucous surfaces, which are the appropriate seats of that disease.

When a person labouring under the venereal disease forms a connexion with another who is free from it, and who happens to have any little excoriation, ulcer, or wound, about the parts of generation, the liability to become attacked by chancre is certainly increased. An open wound brought into contact with the syphilitic virus presents all the conditions for inoculation, and is followed by like results, namely, the formation of a chancre on the spot. Hence, accoucheurs and midwives having a scratch or abrasion on the finger, have become infected on that part by accidental inoculation, when attending women suffering from syphilis. It is to be remarked, that an ulcer or suppurating sore is far less susceptible of infection than a simple wound or scratch.

Another remark which may be added on the nature of the venereal poison is, that there seems to prevail in some constitutions a greater liability to be infected by it than in others: as two men having been connected with a diseased woman within a very short space of time, one of them shall contract infection from her, and the other shall escape with impunity.

GONORRHŒA VIRULENTA.*

No certain rule can be laid down with regard to the time that a clap will take before it makes its appearance after infection has been conveyed. With some persons it will show itself in the course of three or four days; while with others there will not be the least appearance of it before the expiration of a week or two. It most usually is perceptible, however, in the space of three or four days, and in a male begins with an uneasiness about the parts of generation, such as an itching in the glans penis, and a soreness and tingling sensation along the whole course of the urethra; soon after which, the person perceives an appearance of whitish matter at its orifice, and also some degree of pungency on making water.

Here it may be proper to mention, that it is necessary to distinguish accurately true gonorrhœa from that discharge that sometimes takes place from the internal surface of the prepuce, produced by any thing causing irritation there, or behind the corona glandis, as a want of due cleanliness, warts, &c. Yet we know not how the diagnosis is to be made, except by weighing the moral considerations bearing on the case, since a true gonorrhœa may have its seat in the same localities. Authors, indeed, who delight in minute distinctions and multiplicity of names, have designated this disease as it attacks the surface of the glans, that of the prepuce, or both together, by the respective terms, balanitis, posthitis, or balano-posthitis.

It is important in a moral even more than in a medical point of view, to be aware that a discharge from the urethra bearing greater or less resemblance to gonorrhœa, may arise from causes quite independent of specific contagion.

Thus Mr. L. Parker states it as certain, that inflammation with muco-purulent discharge from the urethra may be the result of connexion with women who labour under various forms of disease, such as inflammation of the vagina, the lochial or menstrual discharge, fluor albus, ulcerations of various kinds not syphilitic, and different morbid conditions of the os uteri. The same author tells us that gonorrhœa is also due to other causes apart from sexual intercourse, as masturbation, habitual coistiveness, inflammation of the prostate gland, certain morbid conditions of the bladder or ureters, particularly the presence of calculi in these parts; piles, the excessive or immoderate use of wine or fermented liquors generally, and the warmer spices, more particularly cayenne pepper. We conceive that in these cases, however, the diagnosis will seldom be difficult.

* This disease belongs to Class IV. Locales, Order IV. Apoceneses, in the systematic arrangement of Dr. Cullen; but I have judged it preferable not to separate the varieties of the venereal disease from each other.

The discharge produced by a chancre concealed in the urethra requires to be distinguished from ordinary gonorrhœa. This is said to be serous, sanious, or bloody, instead of muco-purulent as in the latter disease. It is also less in quantity and attended by circumscribed induration in some part of the urethra, which may be felt, when pressure is made, in the course of the canal. In some cases a portion of the sore may be brought into view by evertting the lips of the urethra, but where the chancre is low down this method of exploration is unavailing. The test of inoculation would, it is believed, indicate the true character of the discharge; but we are not prepared to recommend this proceeding, as not being convinced that it is justifiable. It should certainly only be resorted to with the knowledge and consent of the patient himself after its worst possible inconveniences have been explained to him.

In the course of a few days the discharge of matter in gonorrhœa will increase considerably, will assume most probably a greenish or yellowish hue, and will become thinner, and lose its adhesiveness; the parts will also be occupied with some degree of redness and inflammation; in consequence of which, the glans penis will put on the appearance of a ripe cherry, the stream of urine will be smaller than usual, owing to the canal being made narrower by the inflamed state of its internal membrane, and a considerable degree of pain and scalding heat will be experienced on every attempt to void urine.

Where the inflammation prevails in a very high degree, it prevents the extension of the urethra on the taking place of any erection, so that the penis is at that time curved downwards with great pain, which is much increased if attempted to be raised towards the belly; and the stimulus occasions it often to be erected, particularly when the patient is warm in bed, and so deprives him of sleep; producing in some cases an involuntary emission of semen. The above symptoms denote the presence of a chordee.

In consequence of the inflammation, it sometimes happens that at the time of voiding urine, owing to the rupture of some small blood-vessel, a slight hæmorrhage ensues, and a small quantity of blood is voided. In consequence of inflammation, the prepuce likewise becomes often so swelled at the end that it cannot be drawn back, which symptom is called a phymosis; or that, being drawn behind the glans, it cannot be returned; which is known by the name of paraphymosis.

The adjacent parts sympathising with those already affected, the bladder becomes irritable, and incapable of retaining the urine for any length of time; which gives the patient a frequent inclination to make water, and he feels an uneasiness about the scrotum, perinæum, and fundament. Moreover, the glands of the groin grow indurated and enlarged, or perhaps one of the testicles becomes swelled and inflamed; in consequence of which he experiences excruciating pains, extending from the seat of the com-

plaint up into the small of the back, he gets hot and restless, and slight pyrexia arises.

Where the parts are not occupied by much inflammation, few or none of the last-mentioned symptoms will appear, and only a discharge, with a slight heat or scalding in making water, will prevail.

In consequence of the inflammation of gonorrhœa extending along the urethra, it sometimes happens that the mucous membrane of the bladder becomes thickened, indurated, and ulcerated, and pours out a considerable quantity of mucopurulent matter, which, added to the urine, gives to it the appearance of whey.

If a gonorrhœa is neither irritated by an irregularity of the patient, nor prolonged by the want of timely and proper assistance, then, in the course of about a fortnight or three weeks, the discharge, from having been thin and discoloured at first, will become thick, white, and of a ropy consistence; and from having gradually begun to diminish in quantity, will at last cease entirely, together with every inflammatory symptom whatever: whereas, on the contrary, if the patient has led a life of intemperance and sensuality, has partaken freely of the bottle and high-seasoned meats, and has at the same time neglected the necessary means, it may then continue for many weeks or months, and on going off may leave a weakness or gleet behind it.

Another risk arising from the long continuance of a gonorrhœa, especially if it has been attended with inflammatory symptoms, or has been of frequent recurrence, is the taking place of one or more strictures in the urethra. These are sure to occasion a considerable degree of difficulty, as well as pain, in making water, and instead of its being discharged in a free and uninterrupted stream, it splits into two, or perhaps is voided drop by drop. Such affections become, from neglect, of a most serious and dangerous nature, as they not unfrequently block up the urethra, so as to induce a total suppression of urine.

We may rest assured that inflammation in the urethra is the usual source of all strictures, and for the most part this is excited by gonorrhœa; occasionally it has, however, arisen from some other cause producing continued irritation in the parts, as, for instance, from some previous disease in the bladder or prostate gland. Most commonly the course of the complaint is this:—The gonorrhœa has arisen and gone on unchecked, until, the inflammation being at its height, there is a purulent secretion, and probably chordee; the disease, which was at first seated near the orifice of the canal, has spread backwards; but, by the use of appropriate remedies, the pain and other inconvenient symptoms which the patient had experienced are ameliorated: still, however, the irritation does not entirely subside. Some pain and heat in voiding urine are still perceived, and from time to time there flows a gleet discharge; but this gleet is not the effect of mere relaxation of the vessels allowing a profuse discharge, as is too

often supposed — it is the vestige of inflammation, in a milder and more chronic form. When this state of the parts is allowed to continue, a pretty firm stricture will at length be formed. The degree and firmness of the contraction will bear some relation to the length of time, and the frequency of the occasional increase of the irritation, pain, and discharge.

Where a gonorrhœa has been of long standing, warty excrecences are likewise apt to arise about the parts of generation, owing to the matter falling and lodging thereon; and they not unfrequently prove both numerous and troublesome.

It results from the observations of Morgagni, John Hunter, and others that gonorrhœa consists in a suppurative inflammation of the mucous membrane of the urethra without breach of surface, and that ulceration is only an accidental and rare attendant of this complaint. When death has happened during the existence of a gonorrhœa redness of this membrane has been the only change observed in these organs.

The formation of stricture depends upon the extension of inflammation to the areolar tissue subjacent to the mucous; hence there arises effusion of lymph which, both by its bulk, and subsequently by its contraction, presses upon the canal and produces a diminution of the passage. The risk of the supervention of this mischief will be proportional to the intensity and duration of the primary disease, whence it arises that the best expedients for arresting the gonorrhœa are also the best means of preventing this evil consequence of it. The seat of stricture is not limited to any particular part of the canal of the urethra, but that portion which is posterior to the bulbous, and has been named the membranous portion because not covered by the corpus spongiosum, is liable to suffer in this way more than any other. At least Sir B. Brodie concurs with Sir E. Home in representing this as the ordinary situation of the disease when permanent.

Having noticed every symptom which usually attends on gonorrhœa in the male sex, it will only be necessary to observe that the same heat and soreness in making water and the same discharge of discoloured mucous matter, together with a slight pain in walking, and uneasiness in sitting, take place in females as in the former; but as the parts in women which are most apt to be affected by the venereal poison are less complex in their nature, and fewer in number, than in men, so of course the former are not liable to many of the symptoms which the latter are; and from the urinary canal being much shorter and of a more simple form in them than in men, they are seldom, if ever, incommoded by strictures.

With women it indeed often happens that all the symptoms of a gonorrhœa are so very slight, that they experience no other inconvenience than the discharge; except, perhaps, immediately after menstruation, at which period it is no uncommon occurrence for them to perceive some degree of aggravation in the symptoms.

Women of a relaxed habit, and such as have had frequent miscarriages, are apt to be afflicted with a disease known by the name of fluor albus, which it is often difficult to distinguish from gonorrhœa virulenta, as the matter discharged in both is, in many cases, of the same colour and consistence. The surest way of forming a just conclusion in instances of this nature will be, to draw it from an accurate investigation both of the symptoms which are present, and those which have preceded the discharge; as likewise from the concurring circumstances, such as the character and mode of life of the person, and the probability there may be of her having had venereal infection conveyed to her by any connection in which she may be engaged.

In the female, gonorrhœa is not confined to the urethra; it is commonly seated in the vagina, in the mucous membrane reflected over the neck and mouth of the uterus, in the lacunæ surrounding the meatus urinarius, or may affect the external parts, as the inner surfaces of the labia, and the nymphæ. Where the uterus is implicated, ulcers presenting the characters of inflammatory ulceration are excessively common upon that organ. These are not syphilitic, although there are no intrinsic characters (except the property of producing syphilis by inoculation) by which ulcers occupying the same parts can be distinguished from them. Neither again are these ulcerations necessarily the consequence of the contagion of gonorrhœal matter, yet it is considered that women suffering from them are capable of communicating a disease like gonorrhœa to men with whom they may have intercourse.

In the cure of gonorrhœa we are to be directed by the symptoms which are present, and by the state of the disease at the time that advice is applied for. If, at the commencement of the complaint, the patient should experience much pain, heat, and difficulty in voiding urine, together with other inflammatory symptoms, and he is, at the same time, of a full, plethoric habit, it may be advisable to have recourse to antiphlogistic means, as bleeding, keeping the body open with gentle purgatives, allaying irritation by drinking copiously of mucilaginous, diluting liquors, such as barley-water, linseed-tea, or solutions of gum-acaciæ in milk; making use of a very spare regimen; abstaining from all kinds of fermented and spirituous liquors, and avoiding active exercise: but if an inflammatory diathesis does not exist, nor any great degree of ardor urinæ prevail, it then will be unnecessary to have recourse either to general bleeding from the system, or purging. Where the ardor urinæ is distressing, the aid of soothing injections * may prove beneficial, particularly if assisted by bathing the

* R. Mucilag. Gum. Acaciæ, f. ℥iij.

Ol. Olivæ, f. ℥j. M. et adde

Vini Opii, ℥xxx. M.

* Take Mucilage of Gum Acacia, three ounces.

Olive Oil, one ounce.

Mix them, and add

Vinous Solution of Opium, thirty minims.

parts with warm water, or using a warm bath; and these may, in turn, give place to astringent or stimulant ones.

In avoiding purging, when not necessary, we are, however, to take care not to run into the opposite extreme, by suffering costiveness to prevail, as the lodgment of indurated fæces, as well as the voiding of them, might prove a stimulus to the urethra. In every stage of gonorrhœa it therefore will be advisable to keep the body perfectly open, by a regular use of some mild laxative * that is not of an irritating or drastic nature.

In the active or inflammatory stage of gonorrhœa, cubebs have of late been greatly lauded as a valuable remedy. In cases of

Vel,
 R₃ Aq. Fontan. f. $\bar{\text{z}}$ iv.
 Vini Opii, mxxv . M.

Vel,
 R₃ Liquor. Plumbi Di-acet. m xiiij .
 Aquæ Rosæ, f. $\bar{\text{z}}$ viiij. M.

Vel,
 R₃ Infus. Theæ Virid. Herb. f. $\bar{\text{z}}$ vj.
 Liquor Plumb. Di-acet. m xiiij . M.

Vel,
 R₃ Argenti Nitrat. gr. iij. ad gr. vj.
 Aquæ Rosæ, $\bar{\text{z}}$ vj.
 Solve.

Vel,
 R₃ Hydrargyri Bichlorid. gr. iv.
 Aquæ destillatæ, $\bar{\text{z}}$ viiij.
 Solve.
 * R₃ Confect. Sennæ, $\bar{\text{z}}$ jss. (Wallace.)
 Potassæ Supertart. $\bar{\text{z}}$ ij.
 Pulv. Jalapæ, $\bar{\text{z}}$ ss.
 Syrup. Simpl. q. s. M.
 ft. Eleetuarium, ejus sumat coehl. minim.
 j. mane et vespere pro re natâ.

Vel,
 R₃ Mannæ Optim. $\bar{\text{z}}$ ss.
 Potassæ Tartrat. $\bar{\text{z}}$ iiij.
 Aq. Fervent. f. $\bar{\text{z}}$ jss.
 Tinet. Jalapæ, $\bar{\text{z}}$ j. M.
 ft. Haustus, pro re natâ capiendus.

Vel,
 R₃ Magnes. Sulphat. $\bar{\text{z}}$ ij.
 Aq. Fervent. $\bar{\text{z}}$ vij.
 Tinet. Sennæ C., f. $\bar{\text{z}}$ j. M.
 Capiat coehl. ampla iv. pro dos.

Or,
 Take Pure Water, four ounces.
 Vinous Solution of Opium, twenty-five minims.
 Mix them.

Or,
 Take Solution of the Di-acetate of Lead, thirteen minims.
 Rose Water, eight ounces.
 Mix them.

Or,
 Take Infusion of Green Tea, six ounces.
 Solution of Di-acetate of Lead, thirteen minims.
 Mix them.

Or,
 Take of Nitrate of Silver, three to six grains.
 Rose Water, six ounces.
 Dissolve.

Or,
 Take of Bichloride of Mercury, four grains.
 Distilled Water, eight ounces.
 Dissolve. (Wallace.)
 * Take Confection of Senna, one ounce and a half.
 Supertartrate of Potass, two draehms.
 Powdered Jalap, half a draehm.
 Common Syrup, a sufficiency to form an eleetuary, of which let a tea-spoonful be taken morning and evening, as the occasion may require.

Or,
 Take Manna, half an ounce.
 Tartrate of Potass, three draehms.
 Warm Water, one ounce and a half
 Tincture of Jalap, one draehm.
 Mix them for a cathartic draught, to be taken occasionally.

Or,
 Take Sulphate of Magnesia, two ounces.
 Warm Water, seven ounces.
 Compound Tincture of Senna, one ounce.
 Of this mixture let four table-spoonfuls be taken for a dose.

irritable urethra, whether from gonorrhœa or other causes, a solution of the extractum belladonnæ, in the proportion of ten or fifteen grains to a pint of rose-water, used as an injection, will in general be attended with singular advantage, by diminishing the sensibility of the parts.

Authors recognise three stages of gonorrhœa; viz. first that of incubation, characterised only by slight pain, or heat in micturition, puffiness and redness of the lips of the meatus urinarius, and a slight muco-purulent discharge. In this stage the inflammatory symptoms have not reached their full height, nor the discharge assumed the completely purulent appearance which it subsequently acquires. The second stage is that in which the inflammation has reached its acmé; and the disease may be considered as fully formed, and is accompanied by a purulent discharge, and often, at the beginning, with severe symptoms of local irritation, and constitutional disturbance. In the third stage, or that of decline, we have a cessation of pyrexia, and diminution of discharge, which often assumes a mere serous or mucous character; is attended with no pain, and little inconvenience, yet is difficult to stop, and annoying to the patient, as an evidence that the cure is incomplete. The duration of a gonorrhœa is so variable, that Mr. Hunter mentions six days and six months as the ordinary extreme limits. Now it is practicable, in some rare cases, where the patient makes early application for medical advice, and the disease is mild in character, to arrest its progress at the very outset; with this view either balsam of copaiba may be given in large, and frequently repeated doses; or a strong solution of nitrate of silver, containing two grains to the ounce, should be thrown into the urethra by means of a glass syringe, during twenty-four hours, as frequently as the patient can bear it. After this the injections are to be discontinued, while we wait for the result; and thus, in some cases, a complete cure is at once established, while in others the second stage is hastened, and, perhaps, aggravated.

If we determine to trust to copaiba, the balsam must be given in large doses, to the extent of two drachms or more, night and morning, which is best taken floating on wine or lemonade, or may be swallowed, as it is now prepared, inclosed in gelatine capsules. It is to be remembered, however, that it is not so much in the act of swallowing that this medicine produces nausea, as by its persistent after-taste, which every eructation renews; so that we have little confidence in the power of its animal case to make it tolerable to those whose ample throats enable them to gulp it down in this last form. If the abortive treatment be determined on, the plan by injections offers the better promise of speedy success, yet is also attended by the risk of greater evil and inconvenience in case of failure. This treatment should, however, only be attempted while the disease is recent, and within forty-eight hours of its commencement, and where the inflammation is as yet

slight. We believe it to be generally admitted, that in many cases a gonorrhœa will wear itself out, and that in the majority it may be cured by a simply soothing and antiphlogistic method of treatment; yet it must be conceded, at the same time, that its course, under such circumstances, is wont to be a very protracted one; and that, in proportion to the long continuance of the disease, is the risk of secondary mischiefs; appearing in the testicle in the form of epidymitis, and in the urethra as strictures, which, though slight at first, may, at a distant interval, eventuate in severe distress, and even in death. Hence a different plan has been found desirable, which consists in the use of stimulants, and has been named revulsive. There is no essential difference, it seems to us, between the abortive and the revulsive methods, either in the kind of agents employed, or the principle of their actions. But the one is brought to bear upon an augmenting the other upon a stationary or declining disease: in the one a more sudden effect is sought, by using the means more energetically; in the other we are content to allow more time for the operation of milder remedies. Inflammation may run so high, and be accompanied with so much general pyrexia, as to render all stimulants unsafe; or again, inflammatory action may have sunk so low, as to make the revulsive treatment little effectual. The presence of more than slight pyrexia should, in our opinion, exclude either the abortive or revulsive plan; if this be present, it is to be subdued, in rare cases, even by venæsection; more frequently by local bloodletting, used to reduce the inflammation of which it is symptomatic, by saline aperients, by antimonials, abstemious diet, and rest. If little or no pyrexia have existed, or if, having existed, it has been subdued, and if the local inflammation be, or have been rendered, subacute instead of acute, then we may safely resort to, and hope for benefit from, some or other of the remedies to be prescribed below. In cases where the symptoms of local and general disturbance are not so severe as to demand the antiphlogistic measures spoken of above, yet are somewhat too urgent to allow of an immediate recourse to stimulants; from twenty to thirty drops of liquor potassæ, with a drachm of syrup of poppies, given in an ounce and a half or two ounces of water, softened with gum-arabic, will often be found a useful preparative. This medicine is a good one to fall back upon, when, after having commenced the exhibition of stimulating medicines, an increase of pain, the accession of pyrexia, or other symptoms, warn us to desist, for a time, from their employment.

Suppose, then, a patient to apply to us with a gonorrhœa existing in the second stage; that is, with a purulent discharge from the urethra, who suffers some pain in making water, yet is not incommoded by very frequent calls to void it, or by other symptoms of inflamed or irritable bladder; who is without pains in the loins, and free from swelling and tenderness in the testicles, and exhibits little or no general pyrexia; we should at once put him

upon a revulsive plan of treatment, by means of copaiba, and astringent injections. Cubebs may also be tried, either alone, interchangeably with the balsam of copaiba, or mixed with this last. It seems, however, a general opinion that the specific powers of copaiba are more to be depended on than those of cubebs, and that the form of balsam is to be preferred to that of resin, or essential oil. We believe, also, that the volatile oil of cubebs, though presenting great advantages as regards convenience of exhibition, has not superseded the powder in general estimation. Both of these remedies have another inconvenience, besides their nauseousness and bulk; and this arises from the odour with which they impregnate those who are using them in large doses, so as to arouse suspicions, and sometimes tell tales. Astringent injections are liable to no such objection; and are, besides, among the most effectual means that can be employed for arresting the discharge. Their use was formerly discountenanced, from a supposition that they increased the liability to inflammation of the testicle, and to stricture; but this apprehension no longer exists, except in regard to their injudicious employment, or excessive strength. Rules have already been given for ascertaining the time when, or circumstances under which, they may safely be administered; while, as regards their strength, it must be borne in mind that, although the benefit is more marked when we commence at once at a certain point, instead of reaching it in the progress of a gradual increase, yet, on the whole, it is safer and better to err on the side of insufficient, rather than of excessive strength. We know that weak, we might almost say very weak, lotions and injections, are in general favour with some eminent surgeons in the present day. At the beginning we should be careful to err on the safe side rather than on the other; and a brief trial will guide us in our future course. The nitrate of silver injection is that now most trusted to, as prescribed in a former note, but it may be tried, at first, of half that strength*;

* R_y Zinci Acetatis, gr. viij. ad gr. xij.

Aquæ destillat. ℥viij.

Solve.

Vel,

R_y Cupri Sulphatis, gr. viij. ad gr. xij.

Aquæ destillat. ℥viij.

Solve.

Vel,

R_y Ferri Iodidi, gr. ij. ad gr. iv.

Aquæ destillat. ℥vi.

Solve.

Vel,

R_y Zinci Sulphatis, gr. xv.

Aquæ destillat. ℥x.

Tincturæ Arnicæ, ℥ss.

Solve et misce.

* Take Acetate of Zinc, eight to twelve grains.

Distilled Water, eight ounces.

Dissolve.

Or,

Take Sulphate of Copper, eight to twelve grains.

Distilled Water, eight ounces.

Dissolve.

Or,

Take Iodide of Iron, two to four grains.

Distilled Water, six ounces.

Dissolve.

Or,

Take Sulphate of Zinc, fifteen grains.

Distilled Water, ten ounces.

Tincture of Arnica, half a drachm.

Dissolve and mix.

and others, of the foregoing or following forms, may in turn be resorted to, for advantage arises from occasional change of the solution. These injections should be used night and morning, by means of a glass syringe, while the patient is, at the same time, taking either the draught with liquor potassæ above spoken of, or some such mixture as will be found below.* It has been

* R Balsami Copaibæ, ℥iij. ad vj.

Liquor. Potassæ, ℥iij.

Mistur. Acaciæ, ℥ij.

Aquæ Cinnamoni, ℥viijs.

Spiritus Ætheris Nitrici, ℥vj.

Fiat emulsio, e qua sumatur ℥j. ter die.

Vel,

R Balsami Copaibæ, ℥j.

Misturæ Gummi Acaciæ, ℥ij.

Vini Xerici, ℥v.

Fiat mistura, ejus sumatur quarta pars bis die vel sæpius. (*Val de Grace.*)

Vel,

R Balsami Copaibæ,

Spirit. Vini rectificat.,

Aquæ Florum Aurantii,

Aquæ Menthæ Piperit. sing. ℥ij.

Spiritus Ætheris Nitrici, ℥j.

Misce: sumantur cochl. ij. ampla ter die. (*Chopart.*)

Vel,

R Pulv. Piper. Cubeb. ℥j.

Balsami Copaibæ, ℥j. vel. q. s. ut fiat electuarius e quo sumat ℥j. ter die.

Vel,

R Balsami Copaibæ, ℥ss.

Pulv. Piper. Cubeb. ℥j.

Vini Xerici, ℥iij.

Aquæ Rosæ, Flor. Aurantii vel Menth, ℥v.

Pulv. Acac. q. s.

Misce: sumantur cochl. ij. ampla ter die. (*Val de Grace.*)

Vel,

R Pulv. Piper. Cubeb. ℥iss.

Divide in pulv. xii.; sumatur j. ter die.

Vel,

R Liquor. Potassæ, ℥iij.

Mistur. Acaciæ, ℥ij.

Pulv. Piperis Cubeb. ℥j.

Aquæ Puræ, ℥viijs.

Syrup. Aurantii, ℥j.

Misce: sumantur cochl. iij. ampla ter die.

* Take Balsam of Copaiba, three to six drachms.

Liquor Potassæ, three drachms.

Mixture of Gum Arabie, two ounces.

Cinnamon Water, eight ounces and a half.

Nitric Ether, six drachms.

Make an emulsion, of which one ounce is to be taken thrice a-day.

Or,

Take Balsam of Copaiba, one ounce.

Mixture of Gum Arabic, two drachms.

Sherry Wine, five ounces.

Mix, and let a fourth part be taken twice a-day, or oftener. (*Val de Grace.*)

Or,

Take Balsam of Copaiba,

Rectified Spirits of Wine,

Orange Flower Water,

Peppermint Water, of each two ounces.

Spirit of Nitric Ether, one drachm.

Mix, and let two table-spoonfuls be taken thrice a-day. (*Chopart.*)

Or,

Take Powdered Cubebs, an ounce.

Balsam of Copaiba, an ounce, or enough to make an electuary, of which let a drachm be swallowed thrice a-day, wrapped in wafer paper.

Or,

Take Balsam of Copaiba, half an ounce.

Powdered Cubebs, an ounce.

Sherry Wine, three ounces.

Rose, Orange-flower, or Mint-water, five ounces.

Powdered Gum Arabie, enough.

Mix: let two table-spoonfuls be taken three times a-day. (*Val de Grace.*)

Or,

Take Powdered Cubebs, an ounce and a half.

Divide into twelve powders, and let one be taken thrice a-day.

Or,

Take Liquor Potassæ, three drachms.

Mixture of Gum Arabie, two ounces.

Powdered Cubebs, one ounce.

Water, eight ounces and a half.

Syrup of Orange Peel, one ounce.

Mix, and let three table-spoonfuls be taken three times a-day.

recommended, where copaiba cannot be given by the mouth, that it should be administered in the form of enema. We have no experience of this method, and are not much disposed to recommend it; but append two formulæ, taken from Mr. L. Parker's work (as, indeed, are several of the others), for the benefit of those who may think it deserving a trial.*

If, during the exhibition of these stimulants, and the use of the injections, there should come on a greater degree or extent of inflammation, as indicated by increased scalding in making water, increased irritability of the bladder, with more frequent calls to empty it, pain or swelling in the testicles, or pain and aching in the region of the kidneys, with suppression of urine, or blood mixed with it or with the discharge, with more or less of general pyrexia; if any or several of these symptoms supervene, it will be necessary at once to desist from the course we have been pursuing, and to substitute for a time an antiphlogistic and soothing treatment such as that already indicated.

The practitioner should besides be aware that cutaneous eruptions of various kinds, assuming the aspects of erythema, or urticaria, or sometimes having a papular or even vesicular character, have been described as consequences of the administration of copaiba, and any of these might demand the suspension of its use. Under these circumstances it may be necessary to trust to astringent injections alone, to diminish their strength, or even to abandon them altogether. We have heard it stated indeed, as the impression of practical surgeons, that unless they produce speedily a marked benefit, or cure, there is little advantage to be derived from their continued employment. As a general rule, however, we conceive that the revulsive plan may be properly resumed at some future period, when the inflammation has been more completely subdued, provided it be renewed with somewhat more caution and less energy than at the first. Yet, in some cases, it will be best for the patient that all specifics should be abandoned, and that we should content ourselves with restricting him to an abstemious diet, with a free use of diluents, and of the potash mixture, with mild aperients, till the disorder has passed into its third stage.

We know that some surgeons persist in the use of copaiba and cubebs, notwithstanding some augmentation at first of the inflam-

* Balsami Copaibæ,
Vitelli Ovi, ā ʒss.
Infus. Rosæ, ʒxv.
Misce fiat enema.

Vel,

℞ Balsami Copaibæ,
Sacchari Albi, ā ʒj.
Spir. Vini, ʒvi.
Aquæ destillat. ʒxiv.
Extracti Opii, gr. vj.

Misce.

(*Val de Grace.*)

* Take Balsam of Copaiba,
Yolk of egg, of each half an ounce.
Infusion of Roses, fifteen ounces.
Mix, and make a glyster.

Or,

Take Balsam of Copaiba,
White Sugar, of each an ounce.
Spir. of Wine, six drachms.
Distilled Water, fourteen ounces.
Extract of opium, six grains.

Mix.

(*Val de Grace.*)

matory symptoms, and we conceive that the medical attendant should not be too hasty in taking the alarm and altering his practice. It is only an excessive aggravation of the pain and distress at the commencement of the revulsive treatment, or their gradual increase under its continuance, that necessitates its intermission. A cautious perseverance will often show that, though its primary impression is more or less irritating, its secondary action is soothing and beneficial. We must allow a short time, though only a short time (a day or two), in order to ascertain whether the new irritation which our stimulants excite is mastering the original disease, or only adding to its fury.

In the female, gonorrhœa is less apt to be benefited by the use of copiba, than in the male, nor are eubebs much to be trusted. Here the potash mixture is to be preferred, or one of an antiphlogistic kind, such as that prescribed below.* Astringent washes too may be early and freely used, for which purpose any of the preceding may be adopted, and gradually increased in strength. Here, if there be no risk of producing stricture, there is, nevertheless, on account of the larger surface affected, a danger of exciting much constitutional disturbance by the use of very strong washes, so that we cannot recommend that injections should at once be tried, containing ten grains of nitrate of silver to the ounce, or an ounce of alum to the pint. It will be better and safer to commence with solutions of nitrate of silver, acetate of lead, sulphate of zinc, or alum, made with only three grains of either to the ounce, increasing the strength from day to day by a single grain, and, in the case of the last two substances, dissolving them in some vegetable astringent, as decoction of red cinchona, of galls, or of oak bark, instead of in water. The bowels should be so regulated that there may be no irritation from retained fecal matters, or congestion about the rectum, and no straining in evacuating their contents. Where the discharge is obstinate, recourse must be had to an examination by means of the speculum vaginæ; and, if ulcerations are discovered either in the vagina or on the mouth or neck of the uterus, they are to be cauterised either by the nitrate of silver in substance, or by the acid nitrate of mercury. Rest and soothing applications must follow this treatment, with a view of promoting the healing of the ulcer, and with this either the discharge will disappear, or become amenable to the other means.

* ℞ Liquor. Ammon. Acet. ℥jss.

Vini Antimon. Potassio-tart. ℥lxxx.
Tinctur. Colchici, ℥xxv.

Infus. Aurantii Comp ℥iv.

Potassæ Nitrat. ℥j.

Syrup. Papav. ℥ss.

Misce: sumat quartam partem ter die.

* Take Liquor of Acetate of Ammonia,
an ounce and a half.

Antimonial Wine, eighty minims.

Tincture of Colchicum, twenty-five minims.

Compound Infusion of Orange-peel, four ounces.

Nitre, a scruple.

Syrup of Poppies, half an ounce.

Mix, and let a fourth part be taken three times a-day.

In women, when the discharge is fetid, an injection of chloride of soda, made with an ounce of the solution, to sixteen or twelve ounces of water, is sometimes of use: this and the other injections may be thrown in by means of a syringe, when the disease appears seated merely in the outer parts of the vagina, but must be applied by means of a plug of lint dipped in it when the mischief is deeper or affects any portion of the uterus.

Two stages of gonorrhœa have already been spoken of, namely, a formative stage, in which it is advancing to its full development, and a stage in which it may be considered as established or matured, and beginning to decline; and there is a third stage, in which inflammatory symptoms have altogether ceased, and there remains only a discharge, unaccompanied by heat or scalding, or by any other evidences of local irritation. This discharge is often small in amount, and would be of little importance but for the anxiety which it occasions to the patient; and for the possibility of its retaining an infectious property. It has been a generally received opinion that this gleet discharge is in this respect harmless, but we find some doubt raised on this point by Dr. R. Williams, and an example adduced, where a female, labouring under a discharge which had continued for two years, communicated gonorrhœa to a person who had connection with her.

It is the object of the treatment above described, to arrest the disease before it arrives at this chronic and intractable form; but, when we fail in this, different and somewhat more powerful injections may be tried than those before employed; while at the same time we prescribe tonic and astringent medicines. Of these the *tinctura ferri sesquichloridi*, in doses of twenty or thirty minims, given thrice a-day, either in water or infusion of quassia, has appeared to us one of the best; or the sulphate of iron may be given as a pill in a bitter extract, as that of gentian or of hop, or in some terebinthinate, as *ehian turpentine*, or balsam of *copaiba*, thickened with cubebs or other powder; or, again, the sesquioxide of iron in scruple or half drachm doses may be given, with about the same quantity of cubebs. In this stage, if there be no affection of the testicle, no stricture, and no irritability of the bladder, a liberal diet and customary exercise should be allowed. We have heard it said, that a long continued gleet has sometimes disappeared after intoxication, and we may gather from this a hint as to the kind of licence to be allowed, though not as to its extent.

If a *chordee* attends on gonorrhœa, rubbing the parts with a strong solution of opium, or the *tinctura opii*, and keeping linen pledgets, dipped in the same, constantly applied (taking care to renew them, however, as often as they become warm), will greatly tend to remove both the pain and the spasmodic contraction. The most certain method of preventing this unpleasant symptom is to give the patient an opiate draught at bed-time, consisting of at least thirty or forty minims of the tincture of opium in one ounce of camphor mixture. Pills made of equal parts of camphor (pul-

verised by the aid of a little spirit) and extraet of hyoseyanus have been recommended with the same view of preventing painful nocturnal erections, and we have reason to believe that they are often effectual. One, two, or three of these, each weighing five grains, may be given every night at bed-time.

Among the symptoms attendant on gonorrhœa, it has been mentioned that phymosis and paraphymosis are sometimes present. In such cases it will be necessary either to immerse the penis frequently in warm water, or to have recourse to emollient fomentations, with the after application of poultices, composed of crumb of bread mixed up with a solution of the plumbi acetatis, or a sufficient quantity of the liquor plumbi diacetatis diluted with common water, which are to be laid on cold; and the patient is at the same time to keep as much as possible in a recumbent position; or, if obliged to walk about, he should support the penis by means of a proper bandage.

In those cases, both of phymosis and paraphymosis, accompanied by considerable inflammation, it will be advisable, previously to adopting the foregoing steps, to administer cooling purgatives every other day, and to observe a strict antiphlogistic regimen, with rest. Local blood-letting, so useful in other inflammations, is also advisable here.

In phymosis, besides pursuing the plan just recommended, it will be advisable every now and then to inject a little warm milk and water between the prepuce and glans penis, for the purpose of washing off any matter that may have lodged there, and, when the parts have been cleansed as far as possible in this way, a small piece of lint soaked in an astringent wash should be gently introduced by means of a blunt probe, and spread out so as to form a thin layer between the inner surface of the prepuce and the glans, thus keeping them apart, and supplying an appropriate medicine to both. This lint should be renewed two or three times a-day, the parts being freely washed with tepid water injected from a syringe at each time of making the change. We shall thus soon reduce the tumefaction, when the phymosis will cease. We speak here only of the phymosis depending on a local, or, as it has been termed, spurious, gonorrhœa, the balanitis or posthitis of some authors, not of that arising from a chancre concealed under the prepuce, which last, as of more dangerous character, requires to be distinguished from the former.

If the plan here advised do not succeed, so as to enable us to draw back the foreskin and denude the glans, it may then be necessary to divide the prepuce with a sharp bistoury, after which we can more easily follow out the cleansing processes and make the astringent applications for the removal of the discharge which have been just spoken of.

In true gonorrhœa or urethritis, in consequence of the inflammation running high, and extending a considerable way up the urethra, a tumour sometimes forms in the perinæum. In this case

we should endeavour to disperse it by means both of general and topical bleedings, but more particularly the latter; by the application of saturnine poultices, such as before mentioned; by frequently administering laxative medicines; and by making use of a very spare regimen. Rubbing mercurial ointment on the part has been advised in cases of this nature, but it is seldom attended with a good effect.

Where the inflammation shows no disposition to remit from adopting these means, but on the contrary seems to proceed with haste to a suppuration, the evacuation of the matter externally should be promoted, to prevent its making sinuous openings into the urethra, and thereby terminating in fistula in perineo, which can only be removed by the proper surgical operation.

Sometimes the bladder becomes affected, in consequence of the inflammation extending to it; in which case the patient is troubled with a frequent inclination to make water without the ability of voiding it, together with pain in the organ itself, and a considerable degree of tension over the os pubis. To remove this affection it will be necessary to have recourse to leeching the perinæum, copious dilution, emollient and anodyne fomentations and elysters, &c., as advised under the head of Isehuria. In some cases of spasmodic stricture with retention of urine, and where the endeavour to draw it off has failed, placing the patient in a warm bath, and bleeding him ad deliquium animi, has enabled the surgeon to pass the catheter with great ease. It is well in these cases to avoid haste in resorting to this instrument, since there is an irritable condition of the urethra which resists its introduction, while the attempt only aggravates the spasm; whereas free local leeching, with the use of a hip-bath and a soothing and anodyne enema, often relieves the spasm and enables the patient to empty his bladder in the natural way.

In retention of urine arising from spasm, it is observed, under the head of Isehuria, that the profession is indebted to the late Mr. Cline for the discovery of a very efficacious remedy. This is the tinctura ferri sesquichloridi, which we are instructed to give in doses of ten drops, repeated every ten minutes, until some sensible effect is produced. After six doses the urine usually flows freely, the patient previously becoming a little sick and faint.

If we are foiled in overcoming the spasmodic contraction by these means, we may endeavour to introduce an elastic gum catheter, but no violence should be used in passing it.

In spasmodic stricture, where the irritability of the urethra is so considerable as to forbid the introduction of a common bougie, this may be readily lessened by touching the point of the instrument slightly with liquor potassæ, after it has been oiled and is ready for introduction. The effect of potass employed in this manner upon an irritable urethra is often astonishing, and a full-sized bougie may be thus easily got into the bladder, which had been previously regarded as impracticable.

The prostate gland, as well as the bladder, is sometimes affected also in consequence of gonorrhœa, and an inflammation arises in it, which is known by a pain and heat in the perinæum extending into the rectum, and a frequent desire to make water, without the ability of voiding more than a few drops at a time. To obviate this we should make use of topical bleedings, by the application of several leeches to the perinæum, together with a warm hip-bath and emollient fomentations and poultices, and we should keep the patient's body open with laxative medicines and elysters. Where there is great pain and irritation we may employ anodynes, both by the mouth and by adding them to the elysters. (See *Dysuria*.)

In most cases of urinary irritation the best mode, however, of exhibiting opium is that of enema. Forty or sixty minims of the tincture may be administered in thin gruel, with a table-spoonful of olive-oil. Occasionally we may introduce opium into the rectum in substance, and formed into a pill containing two or three grains.

In those deplorable cases where a total retention of urine arises, and we are unable to draw it off either by a catheter or hollow bougie of elastic gum, we should puncture the bladder. The most approved method of doing this appears now to be through the rectum. (See *Ischuria*.)

In consequence of a sympathy of the parts affected, or the having imprudently used any severe exercise, or had too early recourse to strong astringent injections, it sometimes happens that inflammation and swelling attack one of the testicles, showing themselves at first by a similar affection of the spermatic vessels and epididymis.

In these cases we must rigidly pursue an antiphlogistic mode of treatment, by bleeding from the system where an inflammatory diathesis seems to prevail, and by topical bleeding, by means of several leeches, where it does not; besides which we should give the patient a brisk purge every third or fourth day, and confine him to a very spare regimen, and to a recumbent posture.

An efficient method of drawing blood from the part affected is by opening the enlarged serotal veins with a lancet. A greater quantity may in some cases be thus taken, with less trouble to the patient, than by the application of many leeches; independently of which it is advantageous in an economical point of view, particularly in hospital practice. It sometimes happens, however, that, even when the part is much swollen, there are no veins sufficiently apparent to allow of an abstraction of blood in the way just mentioned. In practising this species of venesection, the veins are to be opened when distended in consequence of the patient's standing up. He is to remain in the erect position as long as we wish to encourage the flow of blood, which will cease of itself as soon as he lies down. When the inflammation is reduced by the foregoing means, to which may be added, if necessary, the action of

nauseating doses of antimony, much relief of pain is derived from compression of the affected testicle, by means of straps of adhesive plaister, for the method of applying which we must refer to Mr. Curling's Treatise on Diseases of the Testis, in which it is illustrated by a diagram. The parts must also be supported by a bandage. To remove the induration and swelling which is wont to remain in the epididymis, five grains of blue pill, or some other mercurial, may be given twice a-day or oftener, so as to produce a slight effect upon the mouth; but, except for this or some other secondary affection, mercury is only used by surgeons of the present day as an alterative in gonorrhœa. The proof that this disease is entirely distinct from syphilis, attended by chancre, has removed the theoretic grounds for any other employment of it, which experience has besides shown to be unnecessary and undesirable. We find Mr. Curling cautioning us against astringent injections, copaiba, and cubebs, during or after the existence of epididymitis, as likely to aggravate, or to cause a return of that disease; yet, as regards its first production, he cites the experience of Sir B. Brodie, Mr. Broughton, and his own, to show that its frequency is not increased by the judicious employment of these remedies. It is not till after the first week of the existence of a gonorrhœa that the testicle is attacked by inflammation; in a majority of cases one only of these organs suffers, and Mr. Curling thinks that it is most frequently the right.

Almost every case of inflamed testicle will terminate favourably by paying proper attention to this plan; but when, either from improper treatment, neglect, or any untoward circumstance, a suppuration has ensued, the matter must be discharged by making an opening into the most dependent part of the abscess, and the remainder of the treatment must be the same as in collections of pus in other parts of the body.

An enlargement of the glands in the groin, giving rise to an indurated swelling, is sometimes observed during the progress of a gonorrhœa. Such a swelling or bubo is termed sympathetic, from the belief that it is dependent upon a propagated irritation, and is not a consequence of the absorption of virulent matter, as in the case of the symptomatic bubo which attends chancre. Sympathetic buboes are not prone to go into suppuration, and require little attention beyond the avoidance of walking, or other exercise that might produce irritation. If necessary, a few leeches may be applied, and gentle compression may be made by means of a plaister of ammoniacum, with mercury placed over the surface of the tumour. They will hardly disappear altogether till the gonorrhœa on which they depended is cured or much abated.

The matter discharged in gonorrhœa, being in some instances of an acrid and virulent nature, is apt, by lodging between the prepuce and glans penis in men, and on the labia pudendi in women, to occasion an excoriation and ulceration in these parts. To prevent such consequences, it will be right to pay attention to clean-

liness, by washing them at least twice a-day. When they take place, we must employ lotions* of a solution of plumbi acetatis, or the liquor plumbi subacetatis, sufficiently diluted with water, suspending the penis at the same time to the abdomen, by means of a proper bandage.

Warty excrescences now and then appear about the external organs of generation in both sexes, as a consequence of gonorrhœa and chaneres. They are of various sizes, appearance, and consistence, adhering sometimes by a narrow base and sometimes by a broad one. Wherever a ligature cannot be applied round them, from the broadness of their base, or their being very numerous, they may either be touched with caustic, or be destroyed by the frequent application of other stimulants, such as acetic acid (see *Lues*), a solution of the oxymuriate of mercury, with muriate of ammonia or savine powder. This last has been found to succeed when all the other usual remedies have failed. It acts by producing a considerable discharge from the surface, by which the excrescence is gradually wasted, without causing an eschar like a caustic application. Moreover, it gives little or no pain, and is never productive of inflammation, which not unfrequently follows the use of either a solution of the oxymuriate of mercury or pure potass, or any of the potent caustics.

In consequence of inflammation, certain parts of the urethra are apt to become contracted and to occasion strictures, which cause the urine, instead of flowing in a free and direct stream, to split into two, or to be voided drop by drop. So constantly is inflammation the forerunner of stricture, that it may be held, as well established by evidence, that all strictures in the urethra are consequences of inflammation, as that adhesions of the pleura are produced by it. The most usual way to remove strictures is, by a regular and long-continued use of a bougie; and if made of the elastic gum, bent like a catheter, it will be preferable to those in common use. Were all such as are afflicted with these complaints not to neglect this remedy, we should seldom, if ever, meet with those dreadful cases of retention of urine which occur in practice.

In making use of bougies, it will, however, be necessary to attend to the following rules:—

1st. To begin with one of a moderate size, and to increase it very gradually; but previous to its introduction, if made with wax and oil, as those in common use are, I would recommend it to be held near a gentle fire to soften it, and then bent in the shape of a catheter, so as to adapt it to the curvature of the urethra, by which means its passage will be greatly facilitated.

* R Spirit. Camphoræ, f. ʒij.
Liquor. Plumbi Subacet. f. ʒj.

Aquæ Distillat. Oj. M.
ft. Lotion.

* Take Camphorated Spirit, two drachms.
Solution of Subacetate of Lead,
one drachm.
Distilled Water, one pint.
Mix them for a lotion.

2dly. To employ no force in introducing it; but, where we meet with resistance, to be content with merely causing its point to press against the stricture for a short time each day, with the hope that, by a perseverance in this plan, a dilatation of the contracted part may at last be effected.

3dly. To let it be worn at first only for about half an hour, gradually increasing the time as the parts can bear it without irritation.

4thly. Never to pass it into the bladder, except at first to ascertain the extent of the disease, but merely to carry its point some small distance beyond the stricture or strictures.

5thly. To guard against its slipping into the bladder, by bending its end, and tying it with a cotton thread fastened to the penis.

6thly. To avoid all exercise during its presence in the urethra.

7thly. To continue its occasional use for a considerable length of time after the disappearance of the stricture, and again to have recourse to it on the least return of obstruction.

English surgeons almost invariably adopt these prudent and cautious rules in the treatment of strictures. The introduction of the bougie or catheter must be frequent at first, as daily, or on alternate days, according to the irritability of the parts. As the canal of the urethra regains its natural size, and admits the more ready passage of a larger instrument, the patient may be taught to perform this simple operation for himself, which he should not fail to do occasionally at increasing intervals for many months or even for years. He should at all times be furnished with a catheter that suits him, carrying it about with him when he travels, as he does other necessary articles, and must not fail to resort to it on the return of even slight symptoms of his complaint. But if his malady is more serious, or does not readily yield to his own treatment, he should, whenever he has the option, have speedy recourse to surgical advice. We omit all mention of the employment of caustic bougies in the treatment of strictures, believing that it is a practice pursued by no good surgeon in the present day.

Under the head of Ophthalmia will be found a description of that form of the disease which is associated with gonorrhœa, and produced by contagion of the matter of the discharge.

Gonorrhœal rheumatism, if the disease so named be other than an accidental rheumatism accompanying gonorrhœa, is to be cured, like other forms of rheumatism, by diaphoretics, as Dover's Powder, and antimony, or by colchicum combined with either of these, or added as tincture to the extent of fifteen minims to the potash mixture before recommended. The practice of attempting to relieve the rheumatism by applying gonorrhœal matter to the urethra, in cases where the discharge has suddenly disappeared, is now considered as based on an erroneous theory, and on every account to be deprecated.

SYPHILIS.

THE second form of Venereal Disease, and that to which alone the name of syphilis properly belongs, is marked, when it runs its full course, by symptoms which have been severally classified as primary, secondary, and tertiary.

The existence of primary symptoms is sufficient to constitute the disease; and, as a general rule, and in the ordinary way of propagating it, these are necessary preeursors of the others.

The secondary and tertiary symptoms are those which, if not exclusively, are pre-eminently, constitutional, and are commonly distinguished as such. They are frequent, but not necessary, attendants upon the disease, and it is an object, in all sound treatment, to prevent their occurrence.

The primary symptoms of syphilis are two: namely, a specific sore or ulcer, the result of contagion, called chancre, which is of almost universal occurrence; and an inflammation of the glands or lymphatics, accompanied by swelling, and often followed by more or less suppuration, which is named bubo. It has been proved by M. Ricord that the matter of chancre, before any process of reparation has commenced in it, is capable of producing, by inoculation, a sore like itself, the matter of which will again produce like effects, and so on indefinitely. He has shown, also, that some matter may be obtained from suppurating syphilitic bubo, in all cases, that is capable of producing chancre. More recently, however, he teaches that buboes following indurated chancres rarely suppurate, and that, when they do so, they furnish a non-inoculable matter. If, therefore, the fact of a bubo's inoculating prove it to be virulent, we cannot, nevertheless, rely on the converse position, that it is not virulent because it does not inoeulate. This property of inoeulating, as it has been termed, distinguishes the syphilitic matter, and sore, and bubo, from gonorrhœal and other discharges, and from non-syphilitic sores, and buboes, whether accompanying gonorrhœa or not. It also distinguishes the primary from any secondary symptoms liable to be confounded with them.

Of bubo, it is to be remarked, that it may be, and often is, altogether absent; when present, it is generally a consequence of the absorption of the matter of chancre, but is said, in some rare cases, to be the only primary symptom. It is a common, but we believe not necessary, preeursor of the other orders of symptoms. Primary symptoms are believed not to be communicated by inheritance, and not to give rise to secondary symptoms in this way. For instance, a pregnant woman, suffering from chancre alone, cannot communicate syphilis, either primary or secondary, to her offspring, unless it be the former, at the time of or subsequent to birth, in the way of actual contagion. Primary syphilis, then, is inoculable and contagious, but not hereditary.

Secondary symptoms are those which show themselves in the skin, constituting the various forms of cutaneous eruptions which have been traced to a syphilitic origin. The different forms of ulceration of mucous surfaces belong to this class; as, for the most part, those about the mouth and lips, the tongue, the fauces, and larynx. It is to be borne in mind, however, that primary sores, or true chaneres, are at times produced in some or other of these parts.

Secondary symptoms do not inoculate, yet they appear to be, in some cases, contagious, as when communicated by a diseased child to its nurse, and *vice versâ*; they are, besides, hereditary, or liable to be transmitted to the children of parents labouring under them, without primary symptoms appearing previously in the infants. As regards the time at which they come on in the ordinary course of the disease, it is found that they do not occur till two or three weeks after the appearance of primary symptoms; that they may co-exist with these last, but more frequently succeed them, arising at a later period of the disease, and after the primary ones have disappeared.

The tertiary symptoms (which, as well as the secondary, are included in our idea of lues venerea, or constitutional syphilis) are such as are seen in the periosteum, and bony structures, attended with nodes, caries, exostoses, and pains nearly resembling those of chronic rheumatism. Several varieties of tubercular formations find a place in this order; these symptoms do not inoculate, are not propagated by contagion, and are not distinctly hereditary; nevertheless, they are said to dispose the children of persons in whom they exist to scrofula, gont, and a whole host of constitutional disorders; but in this we conceive that there is far more of theoretic inference than of observed fact. They may co-exist with some or other of the secondary symptoms, such as syphilitic eruptions, or sore throat, or they may commence after these have passed away. They are, in the great majority of cases, preceded by some secondary affection; perhaps universally and necessarily so.

We have stated above that secondary syphilitic symptoms cannot be propagated by artificial inoculation, yet that they may be transmitted from a parent to the offspring, or again, by direct contact, from the mouth of a diseased child to the nipple of its wet nurse. Now these statements certainly appear inconsistent, and in some degree contradictory; and we can only reconcile them by supposing that the intensity of the virus existing in the secretions of the primary sore in the one case, and in the blood, and discharges of the secondary ulcer in the other, must differ considerably in degree. It may thus happen that a more diluted syphilitic poison, whose power is insufficient as it exists in the small quantity conveyed upon the point of a lancet in artificial inoculation for the production of the disease, may yet contaminate the embryo under the peculiar circumstances of generation, followed by the long period of utero-gestation, or may infect the

breast by the frequent repetition of its feeble action. Be this as it may, these admitted facts seem clearly to indicate a diminished energy rather than a total absence of the specific virus in the blood, and secretions of those labouring under the constitutional disease. We are told by Mr. Curling, that many surgeons of experience believe that a man affected with constitutional syphilis, by constant cohabitation with a woman, may convey the disease to her; and that this contamination is supposed to take place by means of the seminal fluid. Facts are recorded which show that it may be transmitted by a diseased mother to the child *in utero*, probably through the blood. The circumstance most difficult of explanation or belief, which is yet admitted by many respectable surgeons and accoucheurs, is, that the father can infect the embryo without communicating the disease to its mother. Yet such a case as this has occurred, within our own experience, in a married woman, the mother of eight children, all of whom pined from the birth, while five were saved by the use of powders of hydrargyrum cum cretâ, and three died, one of them very recently, under our own care, with distinct symptoms of syphilitic infection. Yet the mother is, to all appearance, free from the disease; the father we have had no opportunity of examining.

The parts most apt to be affected with these ulcerations, in men, are the prepuce, the frænum, the orifice of the urethra, and the angle between the glans and body of the penis; and, in women, the labia, nymphæ, clitoris, and os uteri, and in some instances they occur on the free surface of the vagina. Syphilitic matter, by being applied to other parts of the body covered with a mucous membrane, such as the lips, nostrils, &c., may give rise to chancres there also; but being most usually applied to the organs of generation, in consequence of an intercourse between the sexes, these are generally the seat of such ulcers.

A chancre makes its appearance either with a slight inflammation, which afterwards ulcerates, or there arises a small pimple or pustule filled with a transparent fluid, which soon breaks, and forms into a spreading ulcer. The period at which it makes its appearance after infection is very various, being most commonly in five or six days, but in some cases after a much longer interval.

The appearances assumed by primary venereal ulcers are so various, that it would be a vain attempt to endeavour to give any description of them. It is now universally admitted that the sore described by Mr. Hunter, and known as the Hunterian chancre, is not a common form of the disease. It is maintained by M. Ricord, and admitted by most other surgeons, that there are no certain means except inoculation, by which a syphilitic may be distinguished from a non-syphilitic ulcer. We may be assisted in forming an opinion by the history of the case, the seat of the sore, its unhealthy aspect, and resistance of mild treatment, calculated to heal a non-specific excoriation; but we cannot thus, in all cases, arrive at a certain conclusion, although time and observation

enable us to do so, in some instances, which are at first obscure and doubtful. The character of induration about the edges and base is that which is entitled to most weight; but this, often, is not apparent at the commencement of the infection, and a syphilitic sore may heal before its appearance, under a soothing and non-mercurial plan of treatment. On the other hand, some degree of induration may be induced by irritating applications in non-syphilitic excoriations, though this is seldom or never so marked or persistent as that occurring in the specific affection.

"Sores resulting from the application of the venereal poison," writes Mr. Curling, in the lectures already referred to, "present various appearances; no particular form is characteristic of the disease; the aspect of the sore is modified by the constitution of the patient, by the texture of the part affected, and by other circumstances, whose action we are unable altogether to explain.

"Chancres," he continues, "go through two distinct stages; viz. first that of ulceration, and secondly that of reparation, or granulation. It is in the first stage only that they secrete a specific matter capable of propagating the disease by inoculation. When the healing process has commenced, when, that is to say, granulations are forming, and cicatrisation is beginning, then the pus no longer possesses virulent properties. Some even assert that a sore may be in the first stage in one portion of its surface, and in the second stage in another, and this may possibly be so; but, if so, the fact is rather curious than practically important."

Four varieties of chancres are distinguished by the surgeon just referred to, as recognised in practice; viz. the simple, the indurated, the phagedænic, and the sloughing.

First. *The simple chancre* forms, commonly, on the internal surface of the prepuce, on the frænum, and glans penis also; sometimes there are more than one. In the first stage it appears as an excavated sore, with the integuments around red, swollen, and inflamed; in the second stage the surface is raised to the level of the surrounding structures by granulations, which bleed readily; as, for instance, on changing the dressing. This variety of chancre often occupies a considerable extent of surface, being more disposed to spread in breadth than in depth. It frequently lasts for five or six weeks; and, when seated on the frænum, is apt to destroy that part. There is little or no hardness about this form of sore.

Secondly. *The indurated chancre* is that variety which has a hardened base; in some instances having its margin elevated and hardened also, in which form it constitutes the true Hunterian chancre. The indurated chancre is most commonly seen at the junction of the prepuce, with the corona glandis. The Hunterian usually occurs on the prepuce, one or two fringing the opening; but it is considered a rare form of the disease. Induration is produced by the effusion of lymph into the circumjacent areolar tissue, and is more commonly seen where this abounds. It varies

much, according to the stage and duration of the sore; being at first slight, and afterwards increasing, so as sometimes to have the firmness of cartilage. Sores, sometimes large and superficial, with hardness, reaching beyond their margins, are often met with on the body of the penis; and it is common in indurated chancres, whatever their form or extent, to have hardness remaining around their cicatrices after they have healed. On the other hand, an ulcer may be undoubtedly syphilitic which has presented no hardness, either during its progress or after its departure.

Thirdly. *The phagedænic chancre*, or eating syphilitic sore, presents a sharp, irregular margin, an uneven ragged surface of an ash colour, with a thin ichorous discharge, in which no granulations are to be seen; it readily bleeds when touched, and is more or less painful; and, if not checked by treatment, goes on increasing by means of a more or less rapid erosion of neighbouring parts, till sometimes the greater part or whole of the glans penis has been eaten away. When acute, it is often accompanied by surrounding redness, and occasionally by slight œdema. It is observed in persons of impaired and irritable constitutions.

Fourthly. *Sloughing chancre*. — In this, the worst and most formidable description of chancre, the surface exhibits a dark black sloughing appearance, the parts around being partly inflamed, and of a deep red hue. There is also considerable swelling and pain, the penis and prepuce are rapidly destroyed, parts losing their vitality and separating in a succession of sloughs of a dark or ash colour, and the sore in this way spreading in every direction, and producing rapid and extensive destruction. When the sore forms on the glans penis, or internal surface of the prepuce, owing to the high inflammation and œdematous effusion, phymosis takes place, the prepuce becoming so swollen that it cannot be drawn back. Thus the progress of the sore is concealed from view, but the character of the disease is indicated by the excessive tumefaction, the dusky red and smooth appearance of the skin, and the constant discharge of sanious or ichorous and very offensive matter from the opening of the contracted prepuce. By and bye the prepuce separates as a black slough, and the glans penis comes through the opening. This form of sore occurs occasionally in young and dissolute prostitutes, and is currently known as the Swan Alley sore, being so named from a particular locality among the inhabitants of which it was of frequent occurrence.

This variety of chancre is the result of neglect, the sloughing process supervening on primary syphilitic sores in persons of intemperate habits, who pay no attention to the complaint, but persevere in their ordinary course of debauchery. It is attended with considerable constitutional disturbance, full and hard pulse, especially when occurring in young and robust persons, headache, white and furred tongue. When existing, however, in those whose constitutions are already much impaired by intemperance,

the general symptoms are of an adynamic type, and soon assume a typhoid character.

Such is a sketch of the different characters assumed by sores presenting well-marked examples of the several classes in which they may be arranged. In actual practice many will be found to deviate more or less from these types; nay, a sore may, during its progress, change its character, so as from being simple to become indurated; and either of these may assume a phagedænic nature, and any of them take on a sloughing action.

Herpes præputialis, and herpes pudendi, require to be distinguished from chancre occurring in the same parts. Now, herpes is a vesicular disease, in which transparent elevations containing a serous fluid spring up on a much reddened but not indurated surface. The contained fluid in a day or two becomes opalescent, and subsequently the vesicles burst, a thin crust or scab is formed, under which a new cuticle is produced, and, with the exception of some heat and tingling, the surface returns to its natural state in ten days or a fortnight. It is to be remarked, that this disease arises independently of sexual intercourse; that redness, heat, and itching precede the eruption of the vesicles, and are much greater than those which attend chancres at the same, or indeed at any, stage; that the vesicles are more numerous than chancres are wont to be, that their customary seat is the external surface of the prepuce, or labia, and that they bud more readily to a spontaneous cure.

As regards superficial sores, or excoriations observed to arise shortly after sexual intercourse on the organs of generation, though it must be allowed that these are not all of them necessarily syphilitic, yet the probability is, that the majority of them are so, and, the diagnosis without the test of inoculation being now admitted to be impossible, and the employment of this test generally inadmissible, the better course will be to consider them as syphilitic sores. One circumstance may have much weight in influencing our opinion, if we can be accurately informed with regard to it. Thus, if it can be ascertained that the sore existed immediately after a suspicious connection, or within twenty-four hours of that event, we may be almost sure that it is the result of abrasion or of some mechanical action, since chancre never makes its appearance at once, but is preceded by a period of latency, the shortest duration of which according to Hunter is the time just mentioned, while four days is its more ordinary length. The non-appearance of the sore for one, two, or more days after its suspected cause would determine, almost with certainty, that it was of a syphilitic nature. But these are points upon which it is often difficult to obtain exact information. There is, according to M. Ricord, no latent period of the inoculated chancre; there would, therefore, probably be none, were the specific virus to be applied to a previously abraded surface.

As there is always a risk that an absorption of matter may take

place from a chancre, and possibly very speedily, it will not only be necessary to attend to the ulcer, but likewise to secure the constitution by a use of such remedies as are well known to possess the power of counteracting the syphilitic poison.

In cases of a very recent nature, chancres may often be removed by the application of caustic, as by the solid nitrate of silver freely rubbed upon every part of the surface; or more powerful escharotics may be employed, with a better prospect of attaining the object in view, in consequence of their destroying the parts engaged in the disease to a greater depth. Thus the acid nitrate of mercury, made by adding eight parts of nitric acid to four parts of mercury, in a retort, aiding the solution by a gentle heat, and reducing to nine parts by boiling, may be placed on the sore by means of a camel's hair pencil, or small roll of lint, the surface having been previously cleansed by dry lint or a soft sponge. Or, instead of this, strong nitric acid, or acid nitrate of silver, made by dissolving a drachm of lunar caustic in an ounce of nitric acid, may be used in the same way, the surface and edges of the sore being touched or moistened with one or the other, so as to destroy their vitality. The potassa cum calce, formed into a paste with spirits of wine, is the escharotic which Mr. L. Parker regards as the most certain in its destructive action, and therefore the most to be relied upon of all these for the eradication of the syphilitic taint. The paste, made at the time it is wanted for use, is to be applied so as to cover the sore and its edges, and is to remain on for from half a minute to a minute, or more, according to the amount of pain produced, when it is to be removed with a fine bone spatula, and the parts are to be covered with a poultice till the eschar separates. After this, if the treatment have been successful, we shall have a simple instead of a specific ulcer to heal, which may be accomplished without difficulty.

This may be called the abortive treatment of chancre, and is only available within a short period of infection; this is allowed by Ricord, who contends that chancre is, at first, a local symptom, and yet speaks of its destruction by caustic only within three, four, or five days subsequent to the application of its cause, as giving immunity from secondary symptoms. They who, with Dr. Williams, doubt its purely local character even at first, will not be disposed to have recourse to caustics at any time; while the later period at which the patient comes for advice, or the peculiar character of the sore, may forbid their employment by those who, under favourable circumstances, are wont to confide in them. If the chancre be of the sloughing variety, this treatment is no longer considered appropriate or safe; and, in the case of chancres in the urethra, it is clearly impracticable. The necessity for rest on the part of the patient which this treatment involves is often a further argument against its adoption.

Some surgeons, as Ricord and Mr. L. Parker, recommend the cauterisation of the sore not only when it is very recent, but at

any period of its ulcerative or indolent stage, in the hope of facilitating the healing, which they consider an important object, even at a time when its duration has been such as to leave us in doubt whether the conditions necessary for the production of secondary symptoms have not already been fulfilled. Now we know, as regards sores healed in this manner, that they often break out afresh; and both this circumstance, and the apprehension of constitutional mischief, rendering it necessary to put the patient through a mercurial course, the treatment by cauterisation becomes, in a great measure, a work of supererogation, and as such ought to be dispensed with. It is only, then, within the first few days that it seems to us desirable, if we except those cases of extensive ulceration, in which nitric acid or other corrosives may be employed on the same principle that dictates their use in hospital gangrene. Wherever two expedients (cauterisation and mercurial influence) are trusted to, there is a risk that neither will be efficiently employed, and so the patient may fall between two stools. What encouragement, besides, does M. Ricord give to the general application of painful escharotics, when he tells us in his latest publication (see *Lancet*, 25th March, 1848) that, according to the numerous observations which have been made, "it may be inferred that the infection of the system, if it occur at all, takes place pretty early after contagion, and that the appearance of secondaries has nothing to do with the length of time a chancre may remain unhealed. Chancres have been known to last four, five, or six months without being followed by any constitutional manifestation; whilst chancres, on the other hand, which were destroyed five or six days after exposure to contagion, were, notwithstanding this precaution, followed by secondary symptoms."

It appears, indeed, from the experience of Mr. Rose and others, that a mercurial treatment is not indispensable for the cure of chancre; but, while this is conceded, it is believed, nevertheless, that there is a greater liability to the occurrence of constitutional symptoms in those in whom the primary have been removed without the influence of this remedy. It has been found, besides, that however successful the non-mercurial treatment may be as employed upon those who can be placed entirely under the guidance of the surgeon, in a military or other hospital, it is not equally available in general practice. This we learn upon the authority of Sir B. Brodie, to have been proved to be the case by Mr. Rose himself; and we have the opinion of the former of these surgeons in favour of a recourse to mercury (as a general rule, admitting of some exceptions, to be stated presently), on the ground that of all the vaunted remedies there is none so well entitled to confidence as this, both for the eradication of the disease in its primary forms, and the prevention of subsequent mischief. The same celebrated surgeon gives a decided preference to the method of inoculation, as superior to the internal use of this mineral; he conceives that the practice of the moderns is by no means in

advance of that of their predecessors, but that it has retrograded in comparison with it; and he calls attention to the stricter discipline formerly enforced during a mercurial course, and now often overlooked, to the injury of the patient. Ifunction be determined upon, a drachm of the mercurial ointment should be rubbed in upon the inner surface of the thighs, while the patient is sitting before the fire; and not ten minutes only, but three quarters of an hour, are to be devoted to this business; while throughout the treatment the invalid is to be kept in-doors in a warm atmosphere, and to be confined to a spare, light, and unstimulating diet, fermented liquors being, of course, interdicted.

On points of such importance as these, we think it right to give Sir B. Brodie's opinions in his own words, as they appear in a Clinical Lecture, published in the Thirty-third Volume of the London Medical Gazette. He there expresses himself in the following decided terms:—"Experience proves to me, and I am sure that it will prove to you also, that we have hitherto found no remedy having the same power of extinguishing the venereal poison as mercury; but then it must be judiciously administered at the time, and in such cases only as are proper for it; and without all this care, it may do great harm."—"Again," he says, a little further on, "you are not to suppose that you are to administer mercury at random in all cases of syphilis; but the general rule is that it should be given; and, it being so, I shall endeavour to point out briefly not the cases in which you may exhibit it, but the exception to the rule as to its exhibition."

"I believe," he adds, "that scrofulous persons who really have syphilis are best treated by mercury. If mercury be to them an evil, syphilis is a still greater evil. When, in these cases, it is absolutely necessary to exhibit mercury, it must be done with great caution; the remedy must be given in moderate doses, and the patient must be watched all the time he is using it."

Free livers must, according to the same authority, be brought to a more regular manner of life before the mercurial treatment is adopted; and it should be commenced with caution in those who have not before tried it, for fear of its acting as a poison, on account of some peculiarity of constitution, or idiosyncrasy, as it has been called.

"In the case of primary sores," the lecturer tells us, "that it is scarcely ever right to employ mercury in the first instance, where there is a great deal of inflammation in the neighbourhood. The inflammation must be combated by bleeding, purging, and other means; and it is better to patch up the sore as well as you can, and let the disease go on, till it has produced secondary symptoms, rather than to exhibit mercury under the circumstances just mentioned."—"In cases of phagædenic and sloughing chancre, where its condition depends on a bad state of the patient's constitution, it is always wrong to give mercury at first, for it will aggravate the disease, and make it spread more rapidly. But

there are cases in which the phagædena depends on the intense action of the venereal poison, and here mercury may be given."

"If you ask me," says Sir B. Brodie again, "which is the best way of using mercury where the symptoms are not of the very mildest, I must say that that by inunction is infinitely to be preferred. Mercurial inunction is dirty, laborious, and troublesome, and it makes the matter public to the family in which the patient lives; hence it will be generally unpleasant to him; but it has these advantages; it is much less liable to gripe or purge; it cures the disease a great deal better, and does not damage the constitution half so much as mercury taken by the mouth; nay, I will go so far as to say, that except in the slighter forms of the disease, you really cannot depend upon any other kind of mercurial treatment for the cure of the disease."—"You can never be responsible for thoroughly eradicating the disease where the patient is exposed to cold or wet, nor where he does not lead a most regular and careful life in all respects."

In many cases, however, on account of the inconveniences attending mercurial inunction, just pointed out, it will be necessary to trust to the internal use of some mercurial preparation; and the blue pill, mercury with chalk, calomel, Plummer's pill, and the iodide of mercury, are those most commonly in use. Blue pill, mercury, and chalk, or Plummer's pill, may be given in doses of five grains night and morning at the beginning, or three times a day, if they do not readily produce the specific effect upon the gums. Calomel and iodide of mercury are more powerful combinations; and of either of these one grain is to be ordered with the same frequency. If they appear to purge, a quarter or half a grain of opium may be added to each dose. Where the system seems to resist the action of the medicine, we have seen good effects result from mixing one grain of calomel with three or four of blue pill, and exhibiting this combination as before. Whatever be the mode of employing mercury, its use is to be continued till a slight action is produced on the mouth, and the remedy is still to be persevered in, in less frequent, or less powerful doses, till the sore is completely healed, and till all hardness has been removed from the cicatrix, and even some days after this object is attained. It is recommended that in all cases the mercurial course should be followed by one of sarsaparilla, two ounces or more of the compound decoction being taken thrice a day, or the power of this restorative being increased by the addition of half a drachm or a drachm of the extract of sarsaparilla diffused in every dose. This is designed to fortify the constitution against the conjoint effects of the disease, and its remedy. In debilitated and scrofulous individuals, the exhibition of sarsaparilla may accompany the mercurial treatment, and a more liberal diet be allowed than would be suited to the robust and plethoric. Sanguineous depletion sometimes, and often an antiphlogistic regimen, will be the neces-

sary preparation for, or accompaniment of, the specific remedy in these last.

The local treatment of the sore consists in the use of mild and soothing applications; as a piece of lint dipped in a weak lotion of sulphate of zinc, or of diacetate of lead, or in pure water, to which tincture of opium has been added. Mercurial washes or ointments, and all stimulating applications, are improper during the first or ulcerative stage. In this stage we have a specific sore, poisonous, and liable to be irritated by the least stimulus; but in the second or reparative stage, when the sore is beginning to heal, there is no better application than black wash, which is also suitable to chancres of an indolent character, in which the ulceration is proceeding slowly, and to indurated chancres generally.

Where chancres exist along with phymosis, the cure will be both tedious and uncertain, and cannot often be effected by simply throwing up injections of a cleansing nature from time to time between the prepuce and glans. The more certain method will be, to make an incision through the former, or to perform the operation of circumcision. It will be proper, however, before proceeding to this measure, to try what can be effected by carefully introducing a small piece of lint, wet with some one of the dressings here mentioned, between the part occupied by the chancre and the opposing surface, after these have been cleansed as just directed.

For chancres occurring in the canal of the urethra, topical means are much insisted on by Mr. Parker; indeed, he considers constitutional remedies alone inadequate to their cure. In these cases, a small plug of lint, soaked in a solution of ten grains of tannin and two of extract of opium in an ounce of water, is to be inserted in the passage by means of a blunt probe, being renewed after each occasion on which the patient voids his water, and the part is, besides, to be injected thrice a day with tepid olive oil. The exhibition of mercury should, however, be conducted under the same limitations for chancres occurring here, as for those in other situations.

In consequence of the irritation of venereal virus in a debilitated constitution, aggravated, perhaps, by an excessive or injudicious exhibition of mercury, more particularly in a crowded hospital, it not unfrequently happens that chancres become phagedenic. They commence with a livid redness of the part, succeeded speedily by ulceration, which extends laterally, and sometimes penetrates deeply. The ulcer has a corroding appearance, is highly painful, discharges a great quantity of matter, and is often attended with fever. In all such cases stimuli would be injurious, and when used have been known to re-excite the morbid actions of the sore in such a degree as to excite the death of the patient: mercury must therefore be omitted.

The ulcerated parts should be well fomented morning and even-

ing with flannel cloths wrung out in a decoction of bruised poppy-heads and the powdered bark of cinchona, and afterwards be covered with an emollient poultice mixed with carbon. (See *Gangrene*.) Internally we may give opium freely, and at stated intervals; as likewise some light preparation of cinchona bark joined with sarsaparilla and a mineral acid. Wine in moderate quantities will also be proper. The patient, if in an hospital, should be removed to a purer atmosphere.

We read in a lecture of M. Ricord's, translated in the *Lancet* of 11th March 1848,³ that "gangrene generally destroys specificity;" hence the mercurial treatment which we have shown to be inadmissible in sloughing chancre would appear also to be less necessary. "When gangrene comes on," says this author, "you may use, besides soothing and sedative lotions, antiseptic and escharotomized applications, ehloride of lime or soda, quinine in powder, weak solutions of nitrate of mercury &c., without forgetting to favour the fall of the eschar; thereby we often stay a gangrenous tendency, which threatened to destroy the surrounding tissues to a great extent. The general treatment must be suited to the constitutional state of the patient; opium, wine, and support will often be necessary."

In phagedenic ulceration, where the inflammation does not run too high, he recommends escharotomization at once, either with nitrate of silver, acid nitrate of mercury, potassa cum calce, or the actual cautery, with the view of conquering the destructive bias of the disease. These agents must be boldly employed; the whole diseased surface is to be destroyed, till everywhere we meet the healthy tissues; for, if the specific character of the sore be not quite destroyed, the ulcer, when the eschar falls, is as bad as before, and much larger. The most appropriate dressing after escharotomization is said to be a lotion of aromatic wine, with one drachm of tannin or half an ounce of opium to the pound. In this form of sore Mr. Curling uses a saturated solution of nitrate of silver, after any active local inflammation has been subdued by rest, aperients, and antimonials; and soon resorts to sarsaparilla, with nitric acid or iodide of potassium, and other means of invigorating the general health. There are cases in which, as a general rule, mercury is inadmissible, yet in some of which it is found very efficacious. We have already quoted a distinction made by Sir B. Brodie, furnishing a good practical rule; viz. that mercury is to be avoided where the phagedena seems principally to result from the shattered state of the patient's constitution, but is to be employed where it depends upon the intense action of the syphilitic poison in one whose previous health was not manifestly deteriorated. The means above pointed out may often so modify the case as to fit it for mercurial treatment, although this, at the commencement, would have been improper. Ricord has recourse to preparations of iron, and thinks most highly of the tartrate for the improvement of the general health in anæmic subjects of syphilis. As regards dietetic

rules, and the exhibition of tonic or other remedies, Sir B. Brodie's distinction is of the utmost service. Tonics and support must be given to him who is suffering severely from the action of syphilis, on a frame too feeble to make the ordinary resistance; abstinence and antiphlogistics must be directed against the power of the disease, where it is mastering a strong constitution.

Having spoken of a mercurial course as constituting a principal part of the general treatment in the majority of cases of primary syphilis, it becomes necessary to advert to some of the inconveniences which occasionally arise during its progress, and which may require some modification in its farther prosecution, its temporary suspension, or even, in some few cases, its complete discontinuance.

"From the third to the seventh day," writes the late Dr. Colles, in his *Praetial Observations on the Venereal Disease*, "or rather from the first impression of mercury on the system, until the full establishment of ptyalism, we should pay very close attention to our patient; for, during this period, he is liable to most suffering, and to most danger. Thus during this period the patient is liable to attacks of griping, frequent desire to go to stool, and tenesmus; these efforts are attended with only slight evacuations, which chiefly consist of mucus tinged with blood; sickness of stomach and vomiting also often supervene; the skin is hot, and the pulse quick; all which phenomena are explained by the fact that the specific influence of the mercury has taken effect on the alimentary canal instead of the salivary system. This dysenteric affection so generally appears at this period, that the patient should be forewarned and prepared for it. Mercury should be omitted, and draughts, with a draehm of tincture of rhubarb, and from ten to twenty minims of laudanum, in any appropriate vehicle, should be given after each dysenteric stool." Or where there is no sickness, we believe that a full dose of castor oil, with the same quantity of laudanum, will be found more effectual. "A gentle diaphoresis should be encouraged by the tepid bath, or warm bath; in a day or two this febrile excitement will go off, and then we shall generally find that the mouth has become a little more affected; and we may resume the use of the mercury if necessary." It would, we think, be well to recur to its use in a milder form, or smaller doses than previously, and combined with small doses of Dover's powder, or opium.

Again, "it will occasionally happen that the patient, about the usual time, will complain of some fœtor, and some soreness of the gums, and yet we do not find any increased flow of saliva after a lapse of some days. If we now carefully examine the gums they will be found less soft and less swollen than in the regular form of ptyalism, but their edges will be more ulcerated; indeed the ulceration of the edges appears to be the only change which they have undergone."—"This state of things is what the lower orders in Ireland call a dry course; and it is an effect of mercury which

a little experience will discover to be totally inefficient for the cure of the disease; indeed, in some such cases, we shall find that all the symptoms remain unmoved and unaltered. This imperfect attempt at salivation may, however, be converted into full and legitimate ptyalism, by reducing the doses, and lessening the intervals between them, and at the same time using such means as reduce the high degree of fever."

"In some few patients the first influence of mercury on the system is exhibited on the throat, and not on the gums; such persons, about the fifth or sixth day, complain of a sore throat, which they attribute to catching cold. On inspecting the fauces we discover a degree of erysipelatous blush on the arches of the palate, and some inflammatory thickening of the velum palati, on the tonsil, and generally at its upper extremity we see a superficial ash-coloured slough; one side only may be engaged in it, or both may be affected. I need hardly say that in such a case the further persistence in the full doses of mercury would not only prove ineffectual for the relief of the venereal symptoms, but be attended with considerable danger to life by inducing a sloughing condition of the fauces."

"We may declare, that at whatever period of a course of mercury, the mercurial fever is first suddenly excited, there is danger of erythema, and this may be produced by the internal as well as the external use of mercury." The cutaneous eruption here spoken of is much more appropriately termed *eczema*, and is, indeed, so designated by Bateman, Bielt, and Rayer; the last of whom, though introducing it by the name of *hydrargyria*, gives, nevertheless, the other appellation as a synonym. He describes *hydrargyria* under the three species of *mitis*, *febrilis*, and *maligna*. In its mildest form this disease appears to consist of a slight rosy efflorescence; but on a more careful examination the parts affected are seen to be covered with transparent, and exceedingly minute vesicles. They principally appear about the upper and inner parts of the thighs, the scrotum, the groins, and lower parts of the abdomen, and give rise to feelings of violent heat and smarting. There is little or no constitutional disturbance, and in a week or ten days the efflorescence subsides; or desquamation takes place, and the skin remains reddened for a long while.

The severer forms may be produced at once or arise from the aggravation of the first by the continued use of mercury, or prolonged exposure to a mercurial atmosphere. In these there is considerable pyrexia, a more extensive and severer form of eruption; exfoliation of the cuticle, it may be, several times; often some affection of the throat is observed, and parts where two surfaces of the skin come in contact, as the axillæ, the groins, &c., are apt to give out a thick and very offensive discharge. In the worst form the eruption is of a deep, or purple red colour, the face so much swelled that the features are obscured, the vesicles are large and pour out a great deal of acrid fluid, having an odour

which has been compared to that of putrid fish. This process takes place in successive patches of the eruption, until the whole surface of the body from head to foot is sometimes in a state of painful excoaration, with deep fissures in the bends of the joints and in the folds of the skin of the trunk; and with partial scaly incrustations of a yellowish hue, produced by the drying of the humour, by which also the irritation is augmented. The soreness and distress will account for an accelerated pulse and white tongue, but the functions of the stomach and brain are often not evidently affected.

The duration of this disease is seldom less than six weeks and may be much longer. After the discharge ceases the cuticle is liable to desquamate again and again. In some instances not only the cuticle, but the hair and nails fall off; and the latter when renewed are incurvated, thickened, and furrowed. The *eczema rubrum*, however, from the irritation of mercury, is often limited to a small space, and then the discharge is slight and the whole duration short.

In these cases the use of mercury must be discontinued. The remedies recommended by Mr. B. Bell for the removal of the eruption are the internal use of opiates, conjoined with the application of flour or starch powder to the parts affected. The irritation of the skin may sometimes be alleviated by ablution or fomentation with warm gruel, by the use of the warm bath, and by poultices. Where the cuticle has exfoliated, Mr. Pearson recommends the application of a cerate composed of two ounces of *emplastrum plumbi* with half an ounce of yellow wax, and an ounce and a half of olive oil, spread thickly on linen rollers and renewed twice a day. Mild saline aperients with diaphoretics should form part of the earlier treatment. Sulphuric acid, with bark or sarsaparilla, is useful in a later stage.

The disease just spoken of is generally allowed to arise during a mercurial course, whether the medicine be taken internally or applied externally by means of inunction. It may also appear independently of this mineral, at least Dr. Bateman makes no distinction between the *eczema rubrum*, whether following the use of mercury or arising from some other cause.

Mr. Bell mentions a totally different and pustular eruption, of a local character, and produced entirely by the friction employed in the application of the ointment. This eruption, he says, may always be prevented by the precaution of not applying the friction in daily succession to the same part; otherwise no remedy is of any avail while the use of the ointment is continued.

Dr. Colles distinguishes from the other cutaneous affections arising under similar circumstances, an eruption beginning with small but very distinct red papule, some of which in a more advanced stage have vesicles on their apices. They chiefly occupy the anterior surface of each wrist and of the fore arm half-way up to the elbow; the backs of the hands and fingers are also

thickly beset with them. This form of complaint is distinguished from itch, to which it bears some resemblance, by the freedom of the clefts between the fingers. A slight degree of pyrexia, and generally marks of commencing ptyalism, accompany this eruption. An abstinence from mercury, and a few days' use of an antiphlogistic regimen, suffice for the desquamation of the papulæ, and the removal of this rare effect of the mineral.

Another effect of mercury, which he speaks of,—we are not sure that it is distinct from the eczema,—is an excoriation of the skin on the corresponding surfaces of the scrotum and thighs, commencing in the very angle between these parts, sometimes affecting the integuments about the anus and in the cleft between the nates. This is accompanied by a profuse and very fœtid discharge, and produces severe pain whenever the patient attempts the slightest movement even in bed, so as to deprive him of sleep by day and night.

The duration of this complaint, he adds, is from eight to fifteen or twenty days. Opium affords no relief. The antiphlogistic regimen scarcely moderates the fever. The most effective palliative is found in dusting the excoriated parts with equal parts of lapis calaminaris and starch very finely levigated; this is to be laid on pretty thickly, and then a fold of old linen interposed between the adjacent surfaces.

Dr. Colles cautions us that the occurrence of any of these eruptions, while it points out the necessity of suspending the use of mercury; should make us watch with more anxiety the earliest opportunity of resuming its use. "I have known," he says, "cases of mercurial erythema produced by the first three or four doses of mercury; the surgeon then delays resuming its use too long after the fever had ceased; at length begins by employing small doses, and continues the small doses too long, until he finds it necessary to venture on larger, perhaps on double doses, and the new impetus of mercury produces a new attack of the eruption." A constitutional affection attendant on the exhibition of mercury of a very formidable and even fatal character, was first described by Mr. John Pearson, and received from him the name of Erethismus Mercurialis, by which it has subsequently been known.

"In the course of two or three years after my appointment to the care of the Lock Hospital I observed" (says this author in his *Observations on the Effects of various Articles on Lues Venerea*, published in 1800), "that in almost every year, one and sometimes two cases of sudden death occurred among the patients admitted into that institution; that these accidents could not be traced to any evident cause; and that the subjects were commonly men who had nearly and sometimes entirely completed their mercurial course. After some time and much attention, I ascertained that these sinister events were to be ascribed to mercury acting as a poison on the system quite unconnected with its agency as a remedy, and that its deleterious qualities were neither

in proportion to the inflammation of the mouth, nor to the actual quantity of that mineral absorbed into the body. The morbid condition supervening on these occasions I have denominated Erethismus, and it is characterised by great depression of strength, a sense of anxiety about the præcordia, frequent sighing, trembling, partial or universal, a small quick pulse, sometimes vomiting, a pale contracted countenance, a sense of coldness, but the tongue is seldom furred, nor are the vital or natural functions much disordered. When these symptoms are present, a sudden and violent exertion of the animal power will sometimes prove fatal; for instance, walking hastily across the ward, rising up suddenly in bed to take food or drink, or slightly struggling with their fellow patients, are among the circumstances which have commonly preceded the sudden death of those affected with mercurial erethismus."

"To prevent the dangerous consequences of this diseased state, the patient ought to discontinue the use of mercury, nor is this rule to be deviated from, whatever may be the stage or extent or violence of the venereal symptoms. The impending destruction of the patient forms an argument paramount to all others: it may not indeed be superfluous to add that a perseverance in the mercurial course, under these circumstances, will seldom restrain the progress of the disease, or be productive of any advantage.

"The patient must be expressly directed to expose himself freely to a dry cool air, in such a manner as shall be attended with least fatigue. It will not be sufficient to sit in a room with the windows open; he must be taken into a garden or a field, and live as much as possible in the open air until the fore-mentioned symptoms be considerably abated.

"The good effects of this mode of treatment conjoined with a generous course of diet will be soon manifested, and I have very often seen patients so far recovered in the space of from ten to fourteen days, that they could safely resume the use of mercury, and what may appear remarkable, they can very often employ that specific efficiently afterwards without suffering any inconvenience."

As we have quoted above a high authority in favour of confining patients in-doors in a temperate or warm atmosphere during the carrying on of a mercurial course, it is right to state our conviction that while this system promotes the curative action of the remedy, it increases also the liability to some of the untoward accidents which we have described above. On this account the medical attendant must be careful not to push it to an extreme degree; indeed Sir B. Brodie himself suggests allowing the patient gentle exercise, or an airing in mild and fine weather.

Excessive salivation is the only other inconvenience attending the use of mercury of which we have to speak. This may in a majority of cases be prevented by carefully watching the effects upon the mouth, and reducing or discontinuing the specific treatment according to the amount of impression that has been made. We must not forget in this instance, as well as in all others of the

excessive or injurious action of the mineral, that the ointment already smeared on the skin may become absorbed after the frictions are discontinued, and so become a source of farther mischief. On this account where mercurial action is directly to be checked, the skin must be cleansed as far as possible by careful washing.

When, notwithstanding all our precautions, excessive ptyalism has come on, the treatment consists in exposure to a cool pure air, nourishing diet, and purgatives if the intestinal canal is not already irritated.

Mr. Pearson declares the apprehensions entertained of the danger of exposing persons to cold air during salivation to be unfounded, and says, "I observed that the breathing of a cool, dry air was no less beneficial than pleasant to a person affected with ulcerated cheeks and gums; the animal spirits are likewise recruited, and the health so much improved in the course of a week or ten days, that the patient was generally capable of returning to the use of his medicine again. Dr. Christison speaks favourably of the internal use of large doses of acetate of lead. We have not ourselves tried this medicine, but have seen relief afforded by washes of alum containing from three to six grains to the ounce of water, or of chloride of soda made with one part of the solution to fifteen of water. Or again either of the forms given below * may be employed.

Much relief is at times afforded by touching any sores which may exist on the edge of the tongue or inside the cheeks with the solid nitrate of silver, or painting them with a strong solution. Sulphur is thought by some to exercise a beneficial influence in these cases; a scruple or more with half as much as cream of tartar and two grains of powdered ginger may be taken thrice a day in treacle, honey, or other convenient vehicle. Substances in powder, however, sometimes produce annoyance by getting into the ulcerations about the gums or other parts.

A BUBO.

It is to be observed, that between a primary and constitutional affection there often arises a kind of intermediate state, and that in consequence of an absorption of venereal matter from some surface to which it has been applied, the glands situated nearest to the parts thus affected are apt to become indurated, swelled and inflamed, and so to give rise to a bubo; and the parts of generation

* R. Mel. Boracis, f. ℥j.
Aq. Fervent. ℥viij. M.
ft Gargarisma.

Vel,
R. Aluminis, ℥ij.
Decoct. Hordei, Oij.
Mellis Rosæ, f. ℥ij. M.

* Take Honey of Borax, one ounce.
Hot Water, eight ounces.
Mix them for a gargle.

Or,
Take Alum, two drachms.
Decoction of Barley, two pints.
Honey of Roses, two ounces.
Mix them.

usually coming first in contact with the matter, so the glands in the groins are the most general seat of this particular symptom. In most cases the syphilitic virus is absorbed from a chancre or ulcer in the urethra; but instances have occurred where a bubo has arisen without any kind of ulceration, and where the matter appears to have been absorbed without any evident erosion of the skin or of the mucous membrane.

A distinction has always been made between the bubo which often follows chancre, and that which occasionally arises during gonorrhœa; the former is said to be symptomatic, the latter sympathetic; the former the result of absorption of virulent matter, the latter arising from a propagated irritation; matter taken from the former is capable of producing chancre by inoculation, that from the latter has no such property. It is of the former only that we are here speaking. Bubo is classed among the primary symptoms of syphilis, as possessing the power of inoculating, which is wanting in those that are secondary; it is sometimes characterised as a consecutive primary symptom; the reason of which is sufficiently obvious. It is probable that one, or a few only, of the glands of the groin may be directly inflamed as a consequence of the absorption of the specific virus, while the size of the bubo may be augmented by neighbouring glands or parts becoming implicated by the extension to them of a non-specific inflammatory action. For it is found that it is not all the matter obtained from a large bubo which is capable of inoculating, but that only which is taken from the gland which may be considered the nucleus of the swelling, and which lies in the course of the absorbents proceeding from the chancre, and which may sometimes be recognised by tracing the course of the reddened lymphatics themselves. The bubo which arises without having been preceded by any chancre, is not syphilitic, as it does not inoculate, and is never followed by constitutional symptoms. A bubo of this kind is called by French authors *bubo d'emblée*; it is also spoken of as a non-consecutive bubo, but is admitted to be of rare occurrence.

A bubo comes on with a pain in the groin, accompanied with some degree of hardness and swelling, and is at first about the size of a kidney-bean, but continuing to increase, it at length becomes as large as an egg, occasions the person to experience some difficulty in walking, and is attended with a pulsation and throbbing in the tumour, and a great redness of the skin. In some cases the suppuration is quickly completed; in others it goes on very slowly; and in others, again, the inflammatory appearances go off without any formation of pus.

As many other swellings in the groin, such as a rupture, aneurism, lumbar abscess, and scirrhus affection of the glands, may be mistaken for a bubo, it will always be advisable, in doubtful cases, to inquire whether or not the patient has lately been afflicted either with a gonorrhœa or chancre; and whether or not he has lately laboured under any other complaint that might have given rise to

the swelling. It may likewise be advisable to attend to the progress which the tumour has made. By a due consideration and investigation of these circumstances, we cannot fail to form a just conclusion as to the real nature of the disease.

The following are the general characters of a venereal bubo: the swelling is usually confined to one gland; the colour of the skin, where inflammation prevails, is of a florid red; the pain is acute; the progress from inflammation to suppuration and ulceration is generally rapid; the suppuration is large in proportion to the size of the gland; and there is only one abscess.

The position of the swelling is of importance, as assisting in determining its source; thus virulent bubo consecutive upon chancre of the genitals, is always seated above Poupart's ligament, that is above the line joining the upper angle of the hip-bone and pubes. Many of the affections just spoken of give rise to tumours below this line, and are thus easily distinguished, and the same is the case with those glandular enlargements which result from ordinary sores about the foot or leg.

We may thus form a rational but not a certain diagnosis of the existence of a virulent bubo. The irritation of chancre, like that of gonorrhœa, may give rise to bubo as the result of a simple inflammation from sympathy or succession; the only virulent bubo is that which is produced by absorption, and that is capable of inoculating; so that inoculation is the only sure test by which the latter can be distinguished from the former. M. Ricord (as we have already intimated) goes so far as to say that one and the same swelling or bubo may furnish in one part a matter that is inoculable, while that from another part of it is not so. "Absorption," he tells us, "when it takes place from a chancre of the sexual organs, only occurs in the *superficial ganglions*, and most frequently in one at a time, although several ganglions, either superficial or deep-seated, may be inflamed or swollen at the same time; so that one ganglion presents all the characters of a virulent bubo, whilst the neighbouring ganglions, in which the inflammation may come to suppuration, as well as the surrounding areolar tissue, only present a simple and non-virulent character."

However, according to the more recent views of this author (see *Lancet*, 18th March, 1848), adenitis, which is the result of absorption from a non-indurated chancre, attacks only one gland in the superficial set, and the pus secreted is inoculable; but the bubo which results from an indurated chancre, attacks several glands at the same time, springs up in both inguinal regions, is generally of an indolent character, and the pus, if any be obtained from it, does not inoculate. If an inoculating syphilitic bubo be completely laid open, the virulent matter of a part will infect the whole, and we shall have in M. Ricord's view, a sore differing in no essential characters from a chancre, and requiring, therefore, to be treated on the same principles.

A bubo is never attended with danger where the inflamed gland

proceeds on regularly to suppuration; but in particular cases it acquires an indolence after coming to a certain length, arising from a scrofulous taint; or, by being combined with erysipelas, it terminates in phagedenic ulceration, and occasions a great loss of substance. This termination is, however, more frequently met with in hospitals than in private practice, and may partly be attributed to the contaminated state of the air of the wards wherein syphilitic patients are lodged.

The many inconveniences that ensue from allowing a venereal bubo to suppurate, should induce the practitioner to exert his utmost endeavours to prevent it from proceeding to such a state, and to occasion its speedy resolution or dispersion, if possible. To effect this, it will be proper, where the skin is occupied by much redness and inflammation, and the tumour by a throbbing, to draw off a sufficient quantity of blood immediately from the neighbourhood of the inflamed part, during the first days of the disease, by means of five or six leeches; the patient at the same time keeping his body open with some gentle laxative, using a very spare diet, and avoiding exercise. After the leeches have ceased to bleed, the parts may be wetted frequently throughout the course of the day with linen pledgets dipped in any sedative lotion, and by night be covered with a poultice of linseed or rye-meal, moistened either with a diluted solution of plumbi acetatis or the liquor plumbi subacetatis mixed with water.

Mr. Parker deprecates the use of leeches in such cases, which he designates an old-fashioned practice. He insists upon a strict regimen and absolute rest; and points out as the best local treatment the painting over the enlarged gland night and morning with a wash containing a scruple of iodine and two scruples of iodide of potassium dissolved in an ounce of water. He suggests also the use of pressure by means of the plaster of ammoniacum with mercury spread on leather, and applied carefully over the part, but he speaks of the effects of the first of these applications as almost magical. But these means are not to supersede the use of mercury, if it have not been already used in the treatment of the primary sore. Of the modes of employing this remedy we have already spoken when writing on chancre. In this case it is right to keep up a slight mercurial action for some little time after the tumour and induration have disappeared, and probably the exhibition of iodide of potassium will promote this object.

If a bubo is too far advanced to be dispersed at the time that assistance is applied for, or obstinately continues its course to suppuration, in spite of our best endeavours to prevent it, we are then to assist the formation of proper pus by a full diet, and the application of emollient poultices. When this is formed, the tumour may be opened by a lancet or caustic, and the ulcer be brought to a proper digestion by suitable dressings and the use of mercury; taking care, however, not to carry it to the extent of producing severe salivation.

In those cases where there prevails a scrofulous disposition, it frequently happens that the sore does not heal kindly, but, on the contrary, spreads from the glands to the cellular substance, inflames the skin and continuous parts, assumes a foul, spongy appearance, and is accompanied by much pain and a discharge of an highly acrid matter; or should the ulceration heal in one part, it shortly afterwards breaks out in another, and becomes extensive.

Cases of this nature have been most successfully treated by fomenting the ulcerated parts twice a-day with a strong decoction of the leaves of hemlock, or of bruised poppy-heads, and then covering them with some emollient cataplasm. Where the ulcers have a fungous appearance, and discharge a thin, acrid sanies, a little of the hydrargyri nitrico-oxydum may now and then be sprinkled over them, which will seldom fail to promote proper pus, and will by no means excite pain. Or the surface may be brushed over with a solution of nitrate of silver, and the sore dressed with the unguentum hydrargyri nitrico-oxydi, or with black wash, lint dipped in it being introduced under the overhanging edges of the sore, while attention is paid to the improvement of the general health.

As internal medicines, we may administer the bark of cinchona joined with the nitric acid, together with a decoction of mezereon, as in the decoct. sarsæ comp.; which may be taken in the quantity of a quart daily. Iodide of potassium is a fit adjunct to tonic remedies, especially in those cases where there appears to be any taint of serofula in the constitution. This may be dissolved in such quantities in the decoction of sarsaparilla as shall cause it to be taken in a dose of three grains thrice a-day.

Opium has been much employed in these untoward cases, partly on the supposition of its being possessed of some specific power in the cure of syphilis; but its utility seems to depend entirely on its narcotic quality, and its allaying the pain and irritation with which such sores are uniformly accompanied, when the discharge is thin and acrid.

Hemlock has likewise been resorted to in these cases, and sometimes with advantage; it may, therefore, be taken internally. We may begin with about two grains of its extract in the form of a pill, and so increase the quantity daily, until it shows its effect on the system by producing a slight degree of giddiness.

Buboes in scrofulous habits, or when accompanied with erysipelatous inflammation, are very apt, particularly in hospitals, where the air of the ward is much contaminated by many mercurial breaths, to degenerate into phagedænic ulcerations, which extend in a short time over a considerable space, and not unfrequently lay bare a large portion of the thigh and lower part of the abdomen, and even the testicles themselves. In cases of this nature, the ulcerated parts should be well fomented two or three times a-day with flannel cloths wrung out in a warm decoction of bruised

poppy-heads and the einchona bark, and afterwards be covered with an emollient poultice, and oeeasionally with the cataplasma earbonis mentioned under the head of Gangrene. The use of mercury should immediately be desisted from, employing in its stead large and frequently repeated doses of the bark of cinchona, joined with sarsaparilla, together with opium, so as to keep up a constant effect.

The patient is at the same time to be supported with a generous diet and wine, and, if possible, to be removed into a purer air, without which our endeavours may not be erowned with success.

In all cases of bubo, as well as of chanere, where mereury is used either internally or externally, it will be necessary for the patient to abstain from food of a highly-seasoned and salted nature, and from all kinds of spirituous and fermented liquors; and he ought most carefully to avoid getting wet, or exposing himself to moist, eold air: taking the preeaution at the same time, to adapt his clothing to the season of the year.

LUES VENEREA. — CONSTITUTIONAL SYPHILIS.

A CONSTITUTIONAL taint is another form under which it has been mentioned that the syphilitic poison is apt to show itself, and which always arises in consequence of the matter being absorbed, and carried into the circulating mass of fluids.

The most general way in which a eonstitutional taint is produced, is by absorption of matter, either from a ehanere or bubo.

When syphilitic matter gets into the system, some symptoms of it may often be observed in the course of six or eight weeks, or probably sooner; but in some eases it will eontinue in the circulating mass of fluids for a few months before any visible effects are produced. The system being completely contaminated, it then oeeasions many local effects in different parts of the body, and shows itself under a variety of shapes, many of which put on the appearanee of a distinct disease. We may presume that this variety depends wholly on the difference of constitution, the different kinds of parts affected, and the different states these parts were in at the time the matter or poison was applied.

The first symptoms usually show themselves on the skin, and in the mouth and throat. When the matter is secreted prinieipally in the skin, reddish and brown spots appear here and there on its surface, and eruptions of a eopper colour are dispersed over different parts of the body, on the top of which there soon forms a thin scurf or scale. We eannot attempt a detailed account of all the syphilitic eruptions that have been described by authors, but shall borrow from Rayer an enumeration of some distinctive features common to them as a class, and proceed to notice individually only a few of the more frequent of them.

“The syphilida, or syphilitic cutaneous eruptions, except in a

few exceedingly rare instances, are only observed after the occurrence of primary symptoms of greater or less activity.

“They sometimes make their appearance during the continuance, or very shortly after, the invasion of primary symptoms.

“Most commonly, however, it is after several months, and even after several years have elapsed from the date of an apparent cure of every primary symptom, that signs of secondary infection, and especially of venereal eruptions, make their appearance.

“Syphilitic eruptions are sometimes preceded by pyrexia, frequently by nocturnal pains in the bones, or joints, and very commonly by ulcers in the throat; any of which may continue after the appearance of the eruption.”

“Whatever the form of the syphilitic eruption, it very uniformly shows itself upon the external organs of generation, about the verge of the anus, on the face, especially on the forehead and angles of the mouth, on the back, &c.” We should say that the legs and fore arms were also common seats of the scaly varieties.

“Syphilitic eruptions have a peculiar colour, the shades of which vary from a violet red to an earthy yellow, but which is commonly characterized by the general term *coppery*.

“Syphilitic eruptions are almost always accompanied by different other secondary symptoms; and they occasionally alternate with one or several additional symptoms of venereal infection.

“They generally display a great tendency to ulceration, which often assumes peculiar characters.”

A peculiarity which has often struck ourselves, though not much insisted on by authors, is pointed out by M. Biett, when he says that the scales are always thin, dry, and greyish; and he should have added here, as he does subsequently, that as compared with those of lepra they are small. The scabs, he tells us, are thick, greenish, sometimes black and furrowed.

The skin in the interspaces is generally earthy. Cold favours, warmth checks, the development of syphilitic eruptions.

M. Biett has well expressed what we believe to be the prevalent opinion of surgeons of the present day, when he says, as to the value which some pathologists have attached to the success or failure of mercurial preparations in determining the diagnosis, it is evidently none at all, for although mercury is still the most precious remedy we possess for combating syphilis, its effects are subject to so many different modifications, that it would at least be extraordinary to found upon them a decision as to the nature of the malady.

Syphilitic eruptions may come under any one of the six orders into which Dr. Willan has divided skin diseases generally: thus they may appear as rashes, as vesicular, pustular, tubercular, papular, or scaly affections.

The syphilitic rash, which follows primary symptoms at a longer or shorter interval, appears on the trunk and limbs, but very often too on the face, and especially on the forehead. The spots are

sometimes irregular in form but generally rounded, never confluent, of a deep copper colour; disappearing only imperfectly under the pressure of the finger. Their size is somewhat below that of a half-crown piece; they are sometimes, though seldom, covered by a slight scurf, and give rise to a little itching. They are said never to ulcerate. This rash may exist alone, or co-exist with other syphilitic symptoms; as particularly iritis. It is chronic in its character, and indefinite in duration. Their smaller size, peculiar colour, appearance on the exposed rather than the covered parts of the person, as well as the previous history of the case, distinguish these spots from the large stains of the pityriasis versicolor of Willan, the liver spots of popular language.

The most common scaly syphilitic eruption resembles most nearly the psoriasis guttata, from which it is to be distinguished by the copper colour of the spots, the absence of deep cracks or chaps, the thinness of the scales, and, according to M. Bielt, by a small white border around and adhering to the base of each spot. This last appearance is not always present, but is said to be pathognomonic when it does occur: we have ourselves failed to observe it. The spots may be limited to a single region, but more commonly they are met with at the same time, on the neck, back, breast, anterior part of the belly, upon the limbs, on the face, particularly on the forehead, and even on the hairy scalp. They do not ulcerate, but terminate by desquamation and resolution, their duration is commonly very long. The hands and feet sometimes present spots of this disease.

In the syphilitic ecthyma we have one of the pustular forms of a secondary eruption. Here the pustules are distant, distinct, and few in number; they appear on the limbs, and especially on the legs, at first in the form of livid stains of the size of a shilling or larger. The cuticle is raised in the greater part of the spot by a greyish, sero-purulent fluid: the swelling takes place slowly, and is surrounded by a large areola always coppery and very different from that of ecthyma vulgare, which is of a purple red hue. In a few days it bursts and gives exit to a liquid which concretes into a blackish and very hard crust, which becomes by degrees very thick, is furrowed in rings and generally circular. This formation takes place without any symptoms of local inflammation; there is little heat, the neighbouring parts are not painful; generally the patient feels a slight burning. These crusts adhere firmly, and may remain a long while without separating. When they fall either of themselves or in consequence of emollient applications, they leave exposed round ulcers, generally deep, the edges of which are perpendicular and formed of a hard tissue, somewhat violet, and the bottom greyish and pale, presenting an unhealthy aspect. Little by little the crust is formed afresh to fall again till under the use of appropriate remedies, the incrustations become less thick, the ulcerated surfaces clean and are replaced by round and indelible scars. This is, according to M. Bielt, the most com-

mon form of pustular syphilide. It is this variety which is presented by infants that are born infected. In this case the pustules are large, superficial, flattened, oval, and very numerous: they are covered with blackish crusts of little thickness, followed by small ulcers. There is at the same time a characteristic aspect, difficult to describe: the skin is earthy, the children are thin, pallid, their features are drawn, deep furrows mark the face, they look like little old people, and they give out an infected odour. This is not, however, the only form of eruption met with under these circumstances.

The *rupia syphilitica*, as described by Dr. R. Williams, consists of a number of dusky brown tumours of considerable size, each of which is surmounted by a vesicle which bursts, and discharges a clear transparent glutinous fluid that concretes into a peculiar conoidal scab, resembling a limpet shell, in consequence of each successive layer being larger than the former. Beneath this remarkable incrustation a slow process of ulceration goes on, so that on the scab falling off, a wide-spreading ulcer is often seen, sometimes superficial, but at others deep and foul. In the latter case they occasionally penetrate to the bones of the nose, the tibia, the ulna, the clavicle, or the cranium, causing ulceration and caries of those parts. On healing the ulcer leaves a permanent cicatrix.

This disease usually appears on the thighs and legs, or on the arms, but it may form on every part of the body. We have seen an eruption of this kind thick upon the face, which presented many of the peculiar incrustations. Great constitutional depression and more than ordinary wasting accompany this form of the malady.

A syphilitic lichen is also described by authors, which differs, according to M. Bieltz, from lichen simplex in attacking the whole body, and especially in the face, whereas the latter disease is often limited to a single region and frequently to the limbs. The pimples of the syphilitic disease are very small, slightly conical, very numerous, of a deeper colour, while their purplish areolæ become intermixed, and give to the skin the appearance of a coppery surface dotted with small slightly elevated points of a clearer colour.

Syphilitic affections of the throat are not of easy diagnosis from their appearance alone. The chief light is often thrown upon their nature by a minute inquiry into the previous history of the case, or by the coexistence of other symptoms of manifest venereal origin, as of some form of syphilitic eruption, or of the pains of syphilitic rheumatism. It is to be remarked, however, that ulceration of the throat from other causes is not of common occurrence, so that where this symptom is observed independently of any other condition known to be accompanied by it, we shall not be liable to err in attributing it to a syphilitic origin. We must not of course confound with primary ulceration those breaches of surface which may result from abscess in the tonsil in cases of quinsy or of

post-pharyngeal abscess, both of which are easily referred to their proper causes. The sources too of those affections of the throat which accompany erysipelas, scarlatina, and especially that form of it which has been named angina maligna, or other eruptive or febrile diseases, are sufficiently manifest. Mr. Hunter lays it down as a guide in determining the nature of ulcerations of the throat of doubtful character, that if there has been any preceding fever it will be less probable that they are venereal. The case which he considers most liable to be confounded with one of syphilis is that in which a slough has formed in the centre of a swelled tonsil, and has opened a passage out for itself: when the slough has come out the complaint has, he says, most of the characters of the venereal ulcer, so as to be calculated to mislead if first seen only in this stage. The true venereal ulcer of the throat (that which is distinguished by his name in the present day) he describes, as a fair loss of substance, part being dug out, as it were from the body of the tonsil, with a determined edge, commonly very foul, having thick white matter adhering to it like a slough, which cannot be washed away. But this is only one of the forms of syphilitic sore throat admitted in the present day. In some cases superficial ulceration takes place on a hard and enlarged tonsil: or again a superficial spreading ulcer with a regular edge is observed on the back of the pharynx, or occupying any other portion of the fauces.

A yet severer form of disease is sketched by Dr. R. Williams. It begins by a diffuse inflammation of the mucous membrane of the throat, followed speedily by foul and deep ulcers on the tonsils with broken irregular edges, with bases covered by ash-coloured sloughs, and deep coloured inflamed margins. The sloughing process usually extends to the soft palate and uvula, and may spread onward to the arch of the palate, or up to the nasal passages. Again it may involve the pharynx farther than the eye can reach, and may affect the glottis, epiglottis, or larynx; or, taking its course along the eustachian tube, may impair more or less the power of hearing. This sloughing ulcer may commence in the pharynx itself and from this point spread to parts in the vicinity in the manner just described. If this disease terminates favourably a white cicatrix forms in the place of the mucous membrane which has been destroyed. On the other hand the patient may sink with all the symptoms of hectic fever. We take a true sketch of syphilitic iritis from a lecture by Mr. James Dixon, published in the *Lancet* for 18th March, 1848.

This disease is frequently found in conjunction with other secondary symptoms, such as eruptions, on the skin, sore throat, and nodes on various parts of the body. The cornea rarely exhibits any morbid appearance beyond a slight haziness, the sclerotic exhibits a vascular zone, but is less injected in the rest of its extent than in rheumatic inflammation. There is also much less intolerance of light than in the latter form, and in some very acute cases of syphilitic iritis this symptom is altogether wanting. Some-

times, however, it exists to a considerable degree. This author differs from Beer in considering that there is nothing distinctive in the form assumed by the pupil, and nothing either in the form of the fibrinous effusion. These fibrinous masses are of the most varied colour, shape, and size. In some cases they are less than pin's heads; in others they almost fill the anterior chamber. They may be white or yellow, reddish, or brown, according as they are recent or of some duration, or in proportion to the number of vessels traversing them. They are usually first noticed at the margin of the pupil, and it is only in severe inflammation that similar masses are effused on other parts of the iris. This depends upon the arrangement of the vessels, which attain their smallest size and form their freest anastomoses around the edge of the pupil.

Tubercular affections of the skin belong as a general rule to the third order of syphilitic symptoms. We do not hesitate to express our belief that their frequency is much overstated: we cannot give credence to the declaration of M. Rayer, that of all the forms under which syphilis shows itself upon the skin the tubercular is the most frequent; nor even to that of M. Bielt, that it is one of the most frequent.

Syphilitic tubercles, according to the former of these authors, are of a livid or coppery red colour; smooth, or covered with squamæ; flat or prominent, dry or moist on the surface, sometimes supporting fungous growths, frequently occupied by circumscribed ulcerations, and covered with thick scabs, or degenerating into extensive sores of a phagedænic or serpiginous character, hidden under rugous and broad incrustations. Syphilitic tubercles appear *scattered* or *clustered*, or arranged in circular bands, which circumscribe more or less completely spaces of the skin, which is indifferently healthy, or altered in a greater or less degree.

Sometimes the tubercles are no bigger than a pea, arranged in circles, and met with on the forehead and neck; at other times they are larger, and collected in groups, without arrangement, appearing on the face, and chiefly on the cheeks and extremity of the nose. There is no ulceration with either of these varieties. In a large number of cases the tubercles are of considerable size, rounded, few in number, standing apart, of a violet red colour, surrounded by a coppery areola, formed principally on the face, and especially on the upper lip and nose. These continue long, indolent, but at length ulcerate, and then there is a continuous spreading both of the tubercular formation and of the ulcerative process, making havoc in the nose and lip not unlike the ravages of lupus. This destruction of parts is, however, sometimes the result of an action which has commenced internally, by necrosis, and caries of the bones, and ulceration of the mucous membrane.

Again, we meet with large tubercles, red, hard, and rounded, spread here and there on different parts of the body, and chiefly on the back, of the size of a small nut. They have no scales,

and are long indolent, but sooner or later ulcerate, the ulcers healing on one side and spreading on the other, without intermission, so as to describe linear figures, arcs of circles, spirals, zigzags, letters, and so forth, marked out by the states of cicatrix, scab, and ulcer, according to order of progression. This is the serpiginous form of the complaint.

The flat tubercle seems to be the appropriate occupant of the genito-anal region; it is always moist, and often excoriated, and is met with on the serotum, penis, pubes, anterior and inner parts of the thighs, upon the integument round the anus, or labia majora, &c. It is of a circular or oval form, and may attain the size almost of a shilling, and the thickness of several lines. When these tubercles are neglected, or improperly treated, and their fetid discharge left on their surfaces, the wrinkles they present are not only transformed into deep chaps, but into ragged ulcers, resembling other syphilitic sores; but, under proper treatment, they shrink, the secretion diminishes both in quantity and in offensiveness, and, ceasing to discharge, they are followed by a slight exfoliation on the surface, which goes on for some time. Intermixed with the flat tubercles of the serotum and vulva, other forms of tubercles are occasionally met with, covered with fungous growths (vegetations). This is the mucous tubercle of the French.

The flattened tubercles appear, also, on the hairy scalp, in the form of spots of a reddish yellow colour, with yellowish or greenish squamæ; they often form a band on the upper part of the forehead, spreading over the temples, and are apt to ulcerate, and be covered with thick scabs.

Flat tubercles are, besides, met with on the glans penis, inner surface of the prepuce, of the labia, and on the commissures of the lips, and inside of the mouth, in which positions they have a bluish grey tint, owing to the thickening of the epithelium; they arise, also, between the toes.

Subcutaneous tubercles, also, are developed in the areolar tissue, particularly in that of the limbs, at first moveable, and producing no discolouration of the skin, but subsequently increasing, adhering to it, making it red, and causing its perforation.

Besides the fungous growths or vegetations spoken of above, excrescence of the mucous membranes of the genital organs occasionally arise, as more particularly from the depression behind the corona glandis in men, or the inner surface of the labia in women. These have been described as cockscomb, cauliflower, or raspberry excrescences, according to the different forms which they assume; terms to the casual employment of which there is no objection, but which hardly merit a place in medical nomenclature as the names of distinct varieties.

Nodes result from a deposit between the periosteum and bone, the product of inflammation affecting one or both of these parts; these effusions may consist of serum, pus, or lymph. Nodes terminate often by resolution; that is, by the subsidence of the in-

inflammation that gave rise to them, and the absorption of the fluids or matter effused. Where the node has suppurated and burst, or been opened, there may be more or less caries, and the soft parts are apt to form ulcers difficult to heal. Where exostosis has taken place in connection with this disease, the bony matter is not subsequently re-absorbed.

We have always been accustomed to consider mercury as the most certain antidote which we are acquainted with to the syphilitic poison, if judiciously employed or administered; whence it is evident, that it will be necessary to have recourse to it in most of the cases where the system becomes tainted.

There are some persons who are but little affected by mercury when applied externally to the body in the form of unction, as the absorbent vessels will not readily receive it; and there are others, again, whose internal absorbents will not take up a sufficient quantity to produce much effect either on the disease or the constitution; in which case the medicine passes off by the bowels, occasioning sickness at the stomach and griping pains.

To administer mercury judiciously, it ought, therefore, to be used in the way that is most suitable to the constitution of the patient. If, on a trial, the external application of it should produce no effect, either on the disease or constitution, then it should be administered inwardly; on the other hand, if its internal use fails, or produces any disagreeable effect on the stomach and intestines, then the external application ought to be substituted. Indeed, the skin not being so essential to life as the stomach, is capable of bearing the application of mercury to it much better than the latter.

Although the quantity of mercury to be introduced into the system for the cure of lues, must always be in proportion to the virulence of the disease, still, in throwing it in, we should neither proceed with haste nor violence, nor administer it in large or too frequent doses. In all cases it will be most prudent to begin with a small quantity, whether given internally or applied externally, and to increase it gradually, so as that the system shall be inured imperceptibly to the remedy; and as soon as the patient perceives a copperish taste in his mouth, with a great fœtor of breath, and a more than ordinary secretion of saliva, he ought then to proceed cautiously, and, where necessary, wholly to desist from its use for a day or two, returning to it, however, as soon as the sensations have somewhat abated.

To use the medicine so as to give a tendency to salivation without proceeding any length, and to keep it constantly at that point during the whole course, is what he is to aim at.

Mercurial fumigations are abandoned, in the present day, by the majority of practitioners, on the ground of their effects being very little under control; nevertheless, we find Mr. L. Parker commending so strongly the use of the mercurial vapour bath in all forms of venereal eruptions, when no longer accompanied by

fever, in nodes, in indurations of the cicatrix following chancres, in ulcers of the throat, and almost every form of secondary and tertiary syphilis, that we cannot omit here his description of the manner of employing it.

“The patient,” he tells us, “is prepared for its use by low diet, the warm bath used daily, aperients, and the compound decoction of sarsaparilla. This preparatory treatment is pursued for five or six days, and the patient is confined to his room, which should be kept moderately warm; at the end of this period a smart aperient should be exhibited, and the fumigation may then be employed. The patient is placed upon a seat, and covered with a mantle of waxed or oiled cloth; the apparatus, consisting merely of a spirit lamp and china plate, upon which the bisulphuret of mercury is laid, put under it. The mantle should be fixed closely round the neck, to prevent the mercurial vapours being inhaled by the patient, or escaping into the room. The fumigation is continued for a quarter of an hour, and at its conclusion the patient is directed to go to bed, on which account the remedy is most conveniently employed in the evening. The quantity of cinnabar necessary for each fumigation is from twenty grains to one drachm; one application a-day is sufficient, and the cure is generally complete in eighteen or twenty days. In case of salivation occurring, or any other untoward event, the fumigations must be used less frequently, the quantity of the mercury diminished, or the remedy altogether discontinued. When the treatment is terminated the patient is to change his linen, and take a bath.”

We give below M. Cullerier’s formula for pills* of the iodide of mercury; a preparation much used in France in constitutional tubercular affections, in exostoses, and chronic affections of the joints; and we add, also, M. Rayer’s prescription† for the internal use of the mercurial ointment, to which he gives a preference over every other mercurial preparation in the treatment of syphilitic eruptions generally. It is to be remarked, however, that neither of these has come into general use in this country.

Of the other mercurial salts in common use in cases of syphilis, we have spoken when discussing the treatment of chancres; the bichloride, however, is one never used in the primary, but of con-

* ℞ Hydrargyri Iodidi, gr. vj.
Pulv. Opii, gr. iij.
Gummi Guaiaci, ʒss.
Misce Fiant pil. xij.; sumat j. omni nocte maneque.

† ℞ Unguent. Hydrarg. fortior. ʒj.

Sapon. Castillensis, ʒij.
Pulv. Radic. Altheæ, ʒss.

Mistur. Acac. q. s.
Misce et divide in pil. xxxvj.; sumat j. bis vel ter die.

* Take Iodide of Mercury, six grains.
Powdered Opium, three grains.
Gum Guaiacum, half a drachm.
Mix and make twelve pills; and let one be taken night and morning.

† Take Strong Mercurial Ointment, a drachm.

Spanish Soap, two scruples.
Powdered Root of Marsh Mallow, half a drachm.

Mixture of Gum Arabic, enough.
Mix and divide into thirty-six pills, and let one be taken twice or thrice a-day.

siderable value in the constitutional symptoms of this disease, often resorted to where we wish to keep up a specific action without increasing the influence upon the mouth. One drachm of the liquor hydrargyri bichloridi contains a sixteenth of a grain of the salt, which is a sufficient dose to begin with, the quantity being subsequently increased to two or three drachms, or more. We have seen it given in the compound decoction of sarsaparilla in cases of sealy syphilitic eruptions, or of syphilitic pains, which have not yielded to other means. It is by the gradual action of small doses, continued for a considerable time, rather than by any sudden action, that we can hope to effect a cure.

Arsenic has been recommended in the treatment of obstinate sealy syphilitic eruptions; and we think that Donovan's solution of the hydriodate of mercury and arsenic would deserve a trial; fifteen minims should be given at the commencement as a dose, to be gradually increased to half a drachm or more.

The progress of medicine has furnished us with a valuable remedy for the relief of some of the constitutional effects of syphilis, which may in some cases supersede, and in yet more assist, the treatment by mercury. The iodide of potassium is the remedy of which we are speaking, a medicine of much value in some forms of serofulous disease, among the most powerful of those which affect the glands of the absorbent system, and appearing to possess an antagonistic virtue opposed to the deteriorating influence of constitutional syphilis. Hence it is always beneficially employed where there is present any degree of syphilitic cachexia. In rupia syphilitica it has been used by Dr. R. Williams, in cases which appeared almost hopeless, with the happy effect of rapidly restoring the general health. Such cases are unsuited for more than the local or alterative action of mercury. His plan of treatment consisted in the exhibition of eight grains of iodide of potassium in camphor mixture three times a-day, and dressing the sores left after the removal of the crusts by poultices, with mercurial ointment, or with the unguent. hydrarg. nitrico-oxydi, the strength being supported at the same time by a liberal diet.

We have treated cases of syphilitic eethyma with the same medicine, in doses of three grains (which we think sufficient to begin with), given in the compound decoction of sarsaparilla, with very satisfactory results, mercury being given only in combination with aperients, so as to regulate the bowels, or in the form of Plummer's pill, to the extent of five grains every night, but not continued so as to affect the mouth.

In a case of extensive ulcer of the pharynx, the boundaries of which could not be brought within view, but in which there was much pain in deglutition, and great emaciation, the same plan of treatment was eminently successful. In cases of this kind local applications are generally of use, and indeed in some instances essential to the cure. We have been in the habit of trying the detergent effects of a gargle, consisting of decoction of bark, with

five minims of hydrochloric acid to the ounce, and as much syrup or honey as may make it softer and more agreeable. Dr. Williams recommends, for cleansing the ulcer and promoting its healing, the application of the red precipitate ointment, which may be made by means of a piece of lint attached to the end of a pencil, and is to be practised every night and morning. It is not the purpose nor the general result of this use of mercury to affect the mouth, and, where this has happened, it has appeared to be rather injurious than otherwise.

The same means may be resorted to where the bones of the nose appear to be implicated, as shown by a fetid discharge, accompanying other symptoms of syphilitic infection; in fact, the iodide of potassium seems to exert a specific alterative action upon the structures of the throat and nose. In these cases black wash should be injected. Syphilitic rheumatism is to be distinguished from ordinary rheumatism, at least as much by the considerable loss of flesh and strength attending it, as by the aggravation of the pains during the night, or during the earlier part of it. The iodide of potassium is in this case also of much service, causing an abatement of pain and restoration of health; while ten grains of Dover's Powder may be given at night for the sake of procuring rest. We have usually in these cases given one or two grains of calomel each night with the opiate, which addition prevents constipation, and besides carries us forward on our way, if it should become desirable to produce the specific action of mercury. But we have at present under our care a youth in whom both his syphilitic pains have disappeared, and the constitution has improved, while a suppurated node on the sternum is undergoing gradual absorption, without any opiate, and without any mercurial, except small doses of blue pill, given in combination with cathartic extract on alternate nights, and the emplastrum ammoniaci cum hydrargyro applied over the swelling.

We cannot positively assert that in instances such as these the inherent taint of syphilis has been thoroughly eradicated, because we have no information as to the subsequent condition of the patients. Yet, looking at the admitted fact, that every form of syphilis has yielded to non-mercurial treatment, and to the statement of Sir B. Brodie himself, that in some individuals, by mere attention to the general health, the disease will be thrown off, we see at least a probability that the iodide of potassium is in many cases adequate to its permanent cure. On the subject of its use, the view taken by this eminent surgeon is very discouraging, since he says, "that you may remove slight symptoms by giving it in small doses for a long time, and more severe symptoms by exhibiting it in larger doses; but in the latter cases, so far as I have seen, it does not make a permanent cure, and the symptoms return even under the use of the remedy." It seems to us, however, that it may be advantageously administered in all forms of syphilis, accompanied by manifest deterioration of the general health, that in

some of these it will be well to trust to it alone, while in others it will be a good adjutant, and in some a valuable preparative for a mercurial course.

M. Ricord, according to Mr. Langston Parker, employs the iodide of potassium chiefly in tubercular diseases of the skin and mucous membranes, nocturnal pains, periostitis, ostitis, caries, and tumours of the bones.

In syphilitic iritis mercury is the appropriate remedy, and Mr. Dixon recommends two grains of calomel, with a third of a grain of opium, to be given every six hours in the more active cases, after the bowels have first been thoroughly emptied by a brisk purge. In many patients, especially those met with in the London hospitals, blood-letting must either be avoided altogether, or practised with great caution; but if the nocturnal pain be severe, it should be relieved by a few leeches to the temple when great redness of the sclerotic exists, or else by an additional quantity of opium added to the pill at bed-time. Belladonna rubbed around the orbit is considered by this author to be useless, and in some cases even prejudicial. The success of the mercurial treatment depends upon its being resorted to before organisation of the effused lymph has taken place; and the mercurial action should be maintained, not only till the lymph in the anterior chamber is absorbed, but, if possible, till the iris has resumed its natural action. Meat and fermented liquors are to be forbidden, and exposure to cold and strong light avoided.

Cases of iritis have been known to occur in patients who were at the time labouring under mercurial salivation. Here a more generous diet should be allowed, especially where the constitution has been much impaired, and decoction of sarsaparilla or of bark should for a time be given, while some benefit is to be obtained from a small blister applied to the temple next the affected eye. A severe case of iritis supervening on salivation in a patient labouring under albuminuria was, in our own practice, cured by decoction of bark with soda, and the use of a blister. In syphilitic cases, where the tenderness of the mouth has abated with little or no improvement of the condition of the eye, the utmost relief of which the case was capable was procured by giving one grain of calomel with one of quinine every night and morning for a considerable time.

Infected children require a mercurial treatment, and it has been suggested that it should be made to influence them by subjecting those who suckle them to a mercurial course. This plan, however, is to be condemned both as uncertain in its results, and, where the nurse is healthy, as clearly unjustifiable. The hydrargyrum eum cretâ is the best preparation of the mineral, if we determine upon giving the remedy by the mouth. Two grains, with one of sugar, should be given each night, or night and morning where the case is urgent, and to this one grain of the pulvis cretæ comp. eum opio may be added if the bowels are irritable. Instead of this, however,

it will be often better to smear the end of a flannel roller with a drachm of mercurial ointment, and keep it applied to the child's knee, as recommended by Sir B. Brodie.

Pregnancy, unless very far advanced, is not a reason for abstaining from mercurial treatment. Where the mother's symptoms are constitutional, she will be more likely to escape miscarriage, and the child will have a far better chance of life and health, if she be put through a carefully conducted mercurial course; and a decided preference is to be given to the plan by inunction.

Where repeated miscarriages, or the production of infected children, be clearly traceable to a syphilitic taint, it will be most advisable to subject one or both of the parents to a similar treatment, even though there be no other evidence of their labouring under this disease.

In the progress of the disease it is often found necessary, besides employing mercury in order to counteract or destroy the virus in the system, to attend to particular symptoms; for the removal of which a topical treatment may likewise be requisite.

As nodes are often ushered in with symptoms of inflammation, more or less acute, leeches are to be applied to the spot till all tenderness has disappeared; and these should be followed by blisters, to be dressed with strong mercurial ointment. Or, instead of this, they may be smeared or rubbed with a little linimentum hydrargyri, or be brushed over with the solution of iodine and iodide of potassium, mentioned in speaking of the treatment of buboes; but this last application should not be made till after the leech bites have healed. When the node has suppurated, it is seldom or never advisable to open it; the dispersion of the fluid should be attempted by some or other of the means just mentioned, or by the uniform pressure of a plaster of the ammoniacum eum hydrargyro. Iodide of potassium will always deserve a trial in these cases, to be given in the way already indicated. Where this plan is followed by the disappearance of the nodes, and other accompanying syphilitic symptoms, we are not disposed to recommend a recourse to mercurial treatment, and the less so if the patient's health be impaired, and he have already undergone that discipline.

Tubercular eruptions, in their early or inflammatory stage, are benefited by leeches applied at a little distance from their bases, and cooling lotions, as the liquor plumbi diacetatis dilutus, or by fomentations and poultices. When indolent, they should be covered with linen, soaked in a solution of corrosive sublimate, as that of M. Bielt, containing eighteen grains, dissolved in a pint of a decoction of the root of marsh mallow; when ulcerated, nitrate of silver may be applied to their surfaces, or black wash, or the red preeipitate ointment, or weak astringent solutions of diacetate of lead, or sulphate of zinc, or a common bread poultice, according to the condition of the sore. We think that it is hardly enough adverted to how much a simple bread poultice is superior to one

either of linseed or oatmeal in the treatment of foul, irritable ulcers; but we have seen the former succeed, in several instances, in producing a clean and healthy surface where linseed had altogether failed. In some cases cauterisation, with the acid nitrate of mercury, is recommended. Iodide of potassium, and small doses of iodide of mercury, are much relied upon by M. Ricord in these cases.

Aeetic acid will remove corns in one or two applications with the greatest certainty; and, if not carefully managed, the surrounding cuticle also which it happens to touch. To large verrucæ, or warts, with broad bases, the same application will be effectual. Those that are pendulous, with a narrow neck, may be removed with scissors; and, after the oozing of blood has ceased, they may be touched with the sulphate of copper, or a solution of lunar caustic.

This local treatment is adequate to the removal of warts produced by the irritation of gonorrhœal matter, and such as arise in connection with primary sores. Another form of irritating application, noticed by Mr. Parker, consists of equal parts of savine powder, and bichloride and nitric oxide of mercury, well rubbed together, to be used in a dry state. The flat tubercles, or mucous tubercles, or condylomata, as they have variously been termed, are to be distinguished from the vegetations above spoken of, on account of their belonging to the constitutional instead of the primary stage of the disease, and requiring constitutional rather than local treatment. For the cure of these a mercurial course is to be undergone, while they are said to be benefited by mild mercurial ointment, spread on lint, and so applied to them.

In many of the constitutional forms of syphilis, benefit may be derived from the use of sudorifics, which seem especially suited to the treatment of cutaneous eruptions, and painful affections. About a quart of the decoctum sarsaparillæ compositum, or of the Lisbon diet-drink*, the qualities of which have been the subject of so much encomium, may therefore be drunk daily with this view.

* ℞ Sarsaparillæ, concis.
Rad. Chinæ, āā ʒj.
Nucum Juglandis cortic. siccata-
rum, xx.
Antimonii, ʒij.
Lapid. Pumicis Pulv. ʒj.

Aq. Distillat. Ox.
Coque ad dimidium et cola.

Vel,
℞ Rad. Mezerei, contus. ʒij.
— Glycyrrhizæ, ʒj.
Aq. Distillat. Oij.
Coque ad dimidium, et col. bibat Oss. ad
Oj, in die.

* Take Sarsaparilla, sliced,
China Root, of each one ounce.
Dry Rind of twenty Walnuts.

Antimony, two ounces.
Powder of Pumice Stone, one
ounce.
Distilled Water, ten pints.
Boil it slowly until the liquor is reduced
one half, then strain it.
Or,
Take Mezereon Root, bruised, two drs.
Licorice Root, one ounce.
Distilled Water, two pints.
Boil them until the liquor is reduced to a
half, and then strain it off. From half
a pint to a pint may be drunk daily.

In preparing this last, the powdered antimony and pumice-stone are to be tied in separate pieces of rag, and boiled along with the other ingredients. It is probable that the operation of these medicines, where the patient is not under a salivation, may be assisted by going into a warm bath now and then; but, in having recourse to this remedy, the patient must observe the greatest precaution not to take cold, by wrapping himself up in very warm clothing on his coming out of the bath.

SIBBENS.

SIBBENS, or Sivvens, is a disease which was first noticed by Dr. Gilchrist; and we are told by him that it was then confined to the west of Scotland. He supposes that its spreading is chiefly owing to a neglect of cleanliness; but, from the report of others, we are informed, that it is commonly got by drinking from the same cup, smoking tobacco from the same pipe, sleeping in the same bed, or handling the sores of such as labour under it.

The first appearances of the disease are usually to be observed in superficial ulcerations on the tonsils and uvula, together with an aphthous eruption in the inside of the mouth, cheeks, and lips. Sometimes a hoarseness attends this state of the parts, and excrescences similar to a raspberry arise from them. From these the name of sibbens is derived.

Soon after the affection of the mouth has taken place, small pustules are to be discovered on the skin, which break after a time, and leave behind them dry, livid crusts, beneath which ulcers form that bear some resemblance to a chancre, as they spread more in depth than in breadth.

Instead of ulcerations, collections of matter in the form of boils, or critical abscesses, sometimes appear on different parts, which degenerate into sores of a superficial kind, discharging a thin, acrid secretion. These are soon filled up with fungous excrescences, which shoot up in the form of a raspberry, like those of the mouth and throat.

It is seldom that the bones become affected in consequence of the sibbens; but in those cases the gristly parts of the nose have suffered by erosion.

By the natives the disease has been supposed to have some connection with the itch; by others it has been thought to bear a great affinity to syphilis; but, undoubtedly, it has a greater resemblance to the yaws than to any other disease whatever, and possibly might have been introduced into the west of Scotland by some persons from the coast of Africa or the West Indies, where the yaws is a very prevalent disorder, being, however, chiefly confined to negroes, mulattoes, and others of a mixed race; but white people are sometimes attacked by it.

I am, indeed, firmly of opinion, that sibbens is not a distinct

disease from the yaws, but merely a variety; and that the trifling dissimilitude which may be observed between them is wholly to be attributed to the difference of climate, mode of living, diet, colour of the skin, &c. A friendly communication from the late Dr. Collingwood, of Sunderland, has strongly corroborated this opinion. He informs me, that, about the year 1769, a vessel from the West Indies was wrecked on the coast of Wigton, in Cumberland, some of the crew of which were saved, and hospitably received into the houses of those who resided near the spot, and that very soon afterwards the disease in question was communicated to the inhabitants, and became frequent. Dr. Collingwood, being then a resident at Wigton, was called upon for advice, and he treated every case as had been recommended in the yaws by men of experience, and with the greatest success. I am further informed by Dr. Collingwood, that a few years ago he made a tour of the south-west of Scotland for nearly 150 miles, and that he repeatedly inquired for the siccens among the practitioners, the younger of whom had never seen such a disease, while those of more advanced years assured him that it had wholly disappeared.

Dr. Adams, in his *Observations on Morbid Poisons*, informs us, that the siccens is to be distinguished, from lues, by the venereal ulcer being attended with a callous edge and base; whereas that of siccens consists only of the clean, phagedænic ulcer. Moreover, the former retains much longer its copper appearance, and afterwards becomes elevated, having more the colour of the skin; and the scab, when formed, is more scaly. In siccens the appearance is very rarely pustular; and he never could detect pus under the cuticle; he therefore conceives that pus is still less in quantity than in syphilis. He adds, it is universally admitted that siccens never attacks the bones but by spreading from the soft parts, and that it yields earlier to mercury than syphilis.

Siccens is to be cured exactly in the same manner as the yaws, both as to its topical and constitutional treatment. During the first stage of siccens we ought to employ diaphoretics, with warm bathing, to determine the noxious matter to the surface of the body; but in the second stage, where the eruptions begin to dry off, it will be necessary to put the patient under a gentle course of mercury, with the occasional aid of some mild purgative.

FRAMBÆSIA, OR THE YAWS.

THIS is a very common disease among the negroes in our sugar colonies, and imported, no doubt, originally from Africa. It never spreads by miasma floating in the air; but may be quickly propagated by cohabiting, or otherwise coming in frequent contact, with such as are affected by it: hence, although white people do not seem so susceptible of its influence as those of colour, they nevertheless sometimes become tainted.

It may likewise be communicated by the application of matter from a yaw pustule, or sore, to a wound in a person who has not before had the disease; and it is no uncommon occurrence for negroes to inoculate themselves, with the view of obtaining a long exemption from labour. It is one of those complaints which affect the same person but once in his lifetime.

The yaws are sometimes preceded by pains in the limbs, which somewhat resemble those of rheumatism, and are particularly severe round the joints; these pains are attended with languor and debility, and frequently continue for many days without any further appearance of disease. After a time, these precursory symptoms are succeeded by a degree of pyrexia, sometimes attended with rigors, although in other instances the fever is slight and scarcely noticed.

For the most part the patient complains of headache, loss of appetite, and pains in the back and loins, which are rather exacerbated towards evening. When these symptoms have continued for a few days, they are followed by an eruption of pustules, more or less numerous, which appear in various parts of the body, but especially upon the forehead, face, neck, arm-pits, groins, pudenda, and round the anus. The eruption of these pustules is not completed over the whole body at one time, neither do they show themselves in any regular succession on the different parts; but while one crop is falling off, a fresh one is making its appearance in another place. Every new eruption of pustules is usually preceded by a slight febrile paroxysm. On the first appearance of the pustules or pimples, they are not larger than a pin's head, but gradually increase until they attain the size of a sixpence, or even of a shilling. The pustules are filled with an opaque, whitish fluid, and when they burst, a thick viscid matter is discharged, which forms a foul and dense crust or scab upon the surface. From the larger kind of pustules there frequently arise red, fungous excrescences, of various magnitudes, from the size of a pea to that of a large mulberry; which fruit, owing to their rough, granulated surfaces, they somewhat resemble. These fungi, though they rise considerably above the surface of the skin, have but a small degree of sensibility; they never suppurate kindly, but discharge a sordid, glutinous fluid, which forms an ugly scab round the edges of the excrescence, and covers the upper part of it, when much elevated, with a white slough. When these eruptions appear upon any part of the body covered with hair, the colour of the latter is gradually changed from black to white. In general the number and size of the pustules are proportioned to the degree of eruptive fever. When the febrile symptoms are slight, there are few pustules; but they are mostly of a larger size than when the complaint is more violent and extensive.

The duration of the yaws is very uncertain, but is generally supposed to depend a good deal on the habit of body at the time of receiving the infection.

In some cases, they arrive at their full size and maturity in the

space of four or five weeks; but in others, they have taken two or three months.

When no more pustules are thrown out, and when those already upon the skin no longer increase in size, the disease is supposed to have reached its height. About this time it happens, on some part of the body or other, that one of the pustules becomes much larger than the rest, equalling the size of a half-crown piece; it assumes the appearance of an ulcer, and instead of being elevated above the skin like the others, it is somewhat depressed; the surface is foul and sloughy, and pours out an ill-conditioned ichor, which spreads very much by corroding the surrounding sound skin: this is what is called the master or mother yaw. If proper attention be not paid to keep the surface of the ulcer clean, the matter becomes very acrid, and when near a bone sometimes affects it with caries.

When the excreescences appear upon the soles of the feet, they are prevented from rising by the resistance of the thick hard epidermis, and give so much pain that the person affected is unable to walk. The fungi thus situated are called by the negroes in the West Indies tubba, or crab yaws. They are sometimes so large as to cover a great part of the sole of the foot: at other times they are not larger than a shilling; like corns, they are frequently affected by different states of the atmosphere, but more particularly by rainy weather.

Where a judicious mode of treatment has been adopted, the yaws, although a very loathsome complaint, seldom proves either difficult or tedious of cure, and even in the worst of cases is never attended with immediate danger; but where the eruptions have been repelled into the system by external applications, or too early a use of mercury has been resorted to, the cure is often greatly protracted, and in some cases rendered uncertain. Where the disease has been suffered to pursue its course without any assistance, foul ulcers of a considerable extent are apt to be formed, which induce great debility, and often occasion a caries of the bones.

Having clearly ascertained the disorder to be the yaws, the diseased negro ought to be sent immediately to some very private part of the estate, where he can have no possible communication with such as never had it. This precaution is by no means sufficiently attended to, as those who labour under the disease are too frequently suffered to associate and mix in friendly intercourse with other negroes, by which means it is propagated from one to another, instead of being eradicated.

During the eruptive stage of the disease we are to assist the efforts of nature, in determining the noxious matter to the surface of the body, by giving some mild diaphoretic*, which may be

* R Pulv. Contrajerv. gr. x.
Camphoræ, gr. iij.
Sulph. Loti, gr. xv.—5ss.

* Take Powder of Contrajerva, ten grs.
Camphor, three grains.
Washed Sulphur, from fifteen
grains to half a drachm.

washed down with about half a pint of the decoct. sarsaparillæ compositum. With these remedies the patient should make use of a warm bath about twice a-week, confining himself at the same time to a vegetable diet. He ought to be comfortably and warmly lodged, and his system be invigorated by taking daily exercise proportioned to his strength.

In the second stage of the disease, where the eruptions begin to dry off, it will be advisable to employ mercury, so as to produce an alterative effect. A weak solution of the hydrargyri bichloridum* is the medicine which I have found to answer best on this occasion; and in order to disguise its nauseous taste, it may be given in a little of the decoctum sarsaparillæ compos., which may be drunk at the same time, to the extent of a pint a-day. Both are to be continued until the scabs become perfectly dry and fall off; at which period they are to be omitted, and then a few doses of any aperient salt, or other gentle purgative, should be given. If the mouth becomes much affected by the mercury, its use must either be discontinued for a time, or the dose be lessened.

It has already been observed, that there usually remains one large eruption after all the rest have died away; and this, by degenerating into a foul ulcer, discharges an ichorous matter. The best application for its cure is the unguentum hydrargyri nitrico-oxydi. An ointment composed of the subcarbonate of iron with citric acid and prepared lard, is much employed in the West India islands, and with great efficacy.

From the thickness of the cuticle in the feet, when the yaws appear there, the discharge is apt to be confined. When they break they are difficult to heal, often ulcerating the whole sole,

Syr. Simpl. q. s. M.
ft. Bolus, mane et nocte sumendus.

Vel,

℞ Pulv. Gum. Guaiac. ʒss.

— Antimonial. gr. ij.

Sulphur. Loti, gr. xx.—3ss. M.

ft. Pulvis, mane nocteque capendus.

* ℞ Hydrargyr. Bichloridi, gr. iiij.

Solve in Spirit. Tenuior. f. ʒvj. M.

Sumat semiunciam mane et vespere.

Vel,

℞ Hydrargyr. Bichloridi, gr. xx.

Solv. in Spirit. Vin. Gal. f. ʒj. et adde

Vini Antimon. Tart.

Tinct. Opii, āā ʒss. M.

Capiat m̄xij.—xx. mane et nocte, quotidie.

Syrup, a sufficiency.

This bolus is to be taken morning and night.

Or,

Take Gum Guaiacum, in powder, ten grains.

Antimonial Powder, two grs.

Washed Sulphur, from twenty grains to half a drachm.

Mix them, and let this powder be taken morning and night.

* Dissolve Bichloride of Mercury, three grains, in

Proof Spirit, six ounces.

Take half an ounce morning and evening.

Or,

Take Bichloride of Mercury, twenty grains.

Dissolve it in

Brandy, one ounce.

And add

Wine of Tartarized Antimony,

Tincture of Opium, of each half an ounce.

Mix them, and take from twelve to twenty minims morning and night, daily.

and thereby rendering the person incapable of walking. A poultice of the fresh cassava-root, which is of the narcotic tribe, and well known in every West India island, is the best application in such cases.

Hard swellings of a very painful nature, which do not suppurate, sometime appear likewise in the soles of the feet, as a consequence of the yaws, and occasion a lameness. To remove them, the patient should bathe his feet in warm water until the swellings become somewhat soft; they then should be seared with a hot iron, which produces an eschar and sore, that is readily healed by dressing it with some gentle escharotic.

Towards the decline of the yaws, the patient may be benefited by the use of cinchona and mineral acid, sarsaparilla, and a generous diet.

Inoculation has been proposed for this disease, and probably it might be rendered thereby more mild in its symptoms, and quicker in its progress; but as many negroes pass through life without the yaws, and they never prove fatal when judiciously treated, it is not likely that the owners of West India estates will be ready to submit to the unnecessary loss of labour which would be incurred by having recourse to the operation, the disease requiring in some case many months to go through its regular course.

ELEPHANTIASIS.

Two dissimilar diseases have been described under this title — *Elephantiasis Arabum*, Arabian Elephantiasis; the Rose or Barbadoes Leg of the West Indies; and *Elephantiasis Græcorum*, Greek Elephantiasis; *Lepra tuberculata*, tubercular Leprosy; *Lepra Hebræorum*, Hebrew Leprosy.

ELEPHANTIASIS ARABUM, ARABIAN ELEPHANTIASIS; ROSE OR BARBADOES LEG OF THE WEST INDIES.

ELEPHANTIASIS appears to belong to the class of lymphatic diseases: it attacks the skin and adipose membrane of the lower extremities, and gives to the limbs a bulk so monstrous and a form so hideous, that they have been compared to the feet of an elephant, from which appearance the name has been taken. The disease in general is, however, confined to one leg.

Elephantiasis has generally been supposed to arise in consequence of some slight attack of fever, on the cessation of which the matter falls on the leg, and occasions a distension and tumefaction of the limb, which is afterwards overspread with uneven lumps and deep fissures. Some authors, in treating of this disease, confound and blend it with lepra, in which the constitution is generally affected, the whole of the skin becoming thick, rough, and scaly, and assuming a yellow colour, the hair falling off, small elevations arising in different parts of the body, particularly on

the face, which in time degenerate into wide-spreading ulcers, that discharge a fetid corrosive matter, and have a dusky red margin, occasioning extreme debility, and inducing hectic fever: but from having met with many cases during my residence in the West Indies, where elephantiasis was confined entirely to the lower extremities, and unaccompanied by any of the symptoms just detailed, and being moreover a non-contagious disease, the direct contrary being the case with leprosy, I have given it a distinct consideration.

It sometimes comes on gradually, without much previous indisposition; but more generally the person is seized with a coldness and shivering, pains in the head, back, and loins, and some degree of nausea. A slight fever then ensues, and a severe pain is felt in one of the inguinal glands, which after a short time becomes hard, swelled, and inflamed. No suppuration, however, ensues, but a red streak may be observed running down the thigh from the swelled gland to the leg, and along the course of the lymphatics. As the inflammation increases in the parts, the fever generally abates, and perhaps, after two or three days' continuance, goes off. It, however, returns again at uncertain periods, leaving the leg at last very hard, difficult of motion, and greatly swelled with varicose, turgid veins, the skin rough and rugged, and a thickened membrana cellulosa. Scales appear also on the surface, which do not fall off, but are enlarged by the increasing thickness of the membranes; uneven lumps, with deep fissures, are formed, and the leg and foot become at length of an enormous size and hideous appearance.

A person may labour under this disease many years without finding much alteration in the general health, except during the continuance of the attacks; and, perhaps, the chief inconvenience he will experience is the enormous bulky leg which he drags about with him. The encumbrance has, indeed, induced many who have laboured under the disease to submit to an amputation; but the operation seldom proves a radical cure, as the other leg frequently becomes affected.

Dr. Hillary observes*, that he never saw both legs swelled at the same time. Instances where they have alike acquired a frightful and prodigious size, have, however, frequently fallen under my observation, as well as that of other physicians.

From the report of a modern writer†, it appears that the inhabitants of Cochin, on the coast of Malabar, are very much afflicted with an enlargement and swelling of one leg, somewhat similar to elephantiasis; and as the disease is not to be met with in other parts of India, it has the appellation of the Cochin leg. The swelling is always confined to one leg, and reaches from the ankle to the knee; the dimensions of the leg in every part being so large

* See his *Treatise on the Diseases of Barbadoes*.

† See *Parson's Travels in Asia and Africa*, p. 228.

as to equal, if not exceed, the thigh of the same person; but no inconvenience or pain is felt in walking.

A particular species of elephantiasis is said by Dr. Hendy* to be endemial in the island of Barbadoes. It has been denominated the glandular disease: he tells us, that it is not incident to the inhabitants of the other West India islands, and that a person who has suffered from it in Barbadoes may have fresh attacks of it if he remains there; but that, by removing to any other place, he may be certain of preserving himself from any return of the disease. In this assertion Dr. Hendy is certainly mistaken; for I have met with it in both of the islands of St. Christopher and Nevis, and so also have other physicians.† Moreover, a gentleman from the former of these islands, who came to Europe for the recovery of his health, in consequence of both his legs being affected with this species of glandular disease, not long ago applied to me for advice; and although he had been in England nearly two years, and had consulted several of the faculty, still both limbs were very much enlarged, and but very little diminution of size had taken place.

By Dr. Hendy we are informed, that the disease is truly characterised by the appearances it produces on the lymphatic system. These are, almost universally, a certain cord, which is hard or red (often both), extending in the ordinary direction of the lymphatic vessels towards the lymphatic gland. The part affected swells and puts on a shining and œdematous appearance; it does not, however, often pit to the touch, though strongly pressed with the finger, except only when the disease is recent; the effect of pressure is then the same as in cases of anasarca. The joint nearest to the affection becomes stiff and contracted, in consequence of the neighbouring inflammation and swelling.

When the concomitant fever abates, after a duration which varies in different patients, it leaves the local swelling and inflammation, which continue for a few days afterwards. The swelling, indeed, seldom entirely subsides, particularly when the lower extremities are affected. There are some instances, however, in which these enlargements have totally disappeared, but they are rare.

The lymphatic gland has, in several instances, been left enlarged and indurated. Sometimes the inflammation in the gland proceeds to suppuration. The inflammation that takes place in the lymphatic vessels is of the erysipelatous kind, and sometimes terminates in mortification. At other times, however, it resembles rheumatism, and in several instances abscesses have been formed in the cellular substance. Uleers, which are difficult to cure, are in some cases the consequence of these abscesses.

Dr. Hendy conceives, that the lymphatic vessels, being inflamed and obstructed, will be incapable of absorbing and transmitting the

* See his Treatise on the Glandular Disease of Barbadoes.

† See Medico-Chirurgical Transactions, vol. vi. p. 73.

lymph deposited in the cellular membrane by the exhalant arteries; that an undue accumulation of this fluid in consequence taking place, the skin will be distended; that the great distention will crack the skin and suffer the lymph to ooze through the fissures; and that this fluid drying, occasions the scaly scabby appearances exhibited in those cases. He illustrates his opinion by an appeal to the late Mr. Hewson's experiments, by which we are taught that the lymph deposited in the cavities and vessels of an healthy animal will always jelly on being exposed to the air.

The parts most apt to be affected with this disease are the inferior extremities; but the penis and scrotum are also very frequently the seat of it, and the latter in some cases becomes of an uncommon magnitude. In the sixth volume of the *Medico-Chirurgical Transactions*, p. 73., a case is recorded in which the tumour measured longitudinally, from the symphysis pubis to its base, 29 inches, circularly 43. It was removed by an operation, and weighed 70 pounds. The patient recovered, and lived many years afterwards. Upon examining the tumour, the testicles were found to occupy their natural position; the left one was about the size of a hen's egg; the tunica vaginalis of the right side contained three pints of water, but the testicle was considerably diminished. The right side of the scrotum being opened, the integuments at the upper part were about two inches in thickness; nearer to the base they increased to four inches and a half; a fluid oozed from its substance, and the cavity was filled with gelatinous matter and a fluid: on cooling, the latter became gelatinous also.

The occasional cause of the disease is referred by Dr. Hendy chiefly to cold; and he considers the peculiar dryness of the atmosphere of Barbadoes, arising from its being cleared of woods, with which the other West India islands abound, as the circumstance which renders the people of Barbadoes particularly liable to this complaint. What the real cause may be, I will not pretend to determine; but I think it may be owing more likely to some peculiarity in the waters of that island. The inhabitants of certain districts abounding with saline and mineral springs are more frequently afflicted, we well know, with diseases of the glands in the neck, such as the goitre and Derbyshire neck, than persons residing in other situations.

Although there is some little difference in the appearance of the two affections here described, the Barbadoes disease strongly resembling the chronic stage of phlegmasia dolens (see this affection), still both require a similar treatment at their onset.

Notwithstanding that the fever which precedes the inflammatory affection of the groin sometimes runs high, still it seldom will be necessary, in elephantiasis, to have recourse to the lancet in order to moderate it. Should any great degree of nausea prevail, it may be advisable to give an emetic; and after its operation, if the body should be costive, some gentle purgative may be administered.

To promote a moderate perspiration, the diaphoretics advised under the head of Simple Fever may be prescribed; to assist the effect of which, the patient should drink plentifully of warm diluting liquors. The parts affected are to be well fomented with cloths dipped in a warm infusion of emollient herbs, and afterwards be wrapped up in flannel. At the commencement, warm bathing might possibly be of use.

When the fever goes off, the emehona may be given with advantage; and it is probable that an issue put into the thigh might be serviceable.

If suitable means have been neglected on the first attack of the disease, and the leg has become much enlarged with a scaly and irregular surface, no cure can be expected. It is probable, however, that gentle alteratives*, with warm bathing, might somewhat retard its progress. The decoct. sarsaparillæ compos., mezerei, vel lobeliæ syphiliticæ (see *Lues* and *Leprosy*), might also be used with advantage, changing the one for the other as the circumstances of the case may seem to require.

A case of elephantiasis, reported by Mr. Ward of Manchester, in the 9th vol. of the Medical and Physical Journal, p. 545., induces me to recommend a trial to be made of the effect of pressure. The best mode of applying it is that advised by Mr. Baynton in the cure of ulcers, and which is fully detailed in the treatment of these complaints; but previous to the application of the strips of adhesive plaster and bandage, it will be advisable to wash the tumid parts very well with tepid water and soap, at least two or three times a-week.

It appears, from some late accounts, that the Hindoo physicians use arsenic internally in the treatment of elephantiasis. They make it into pills with pepper in the following manner:—

Take of white arsenic, fine and fresh, one part; of picked black pepper, six parts.

Let both be very well beaten together for a considerable time in an iron mortar, and then reduced into an impalpable powder in one of stone, with a stone pestle; and thus completely levigated, a little water being mixed with them, make pills of them as large as tares or small pulse, and keep them dry in a shady place.

They direct one of these pills to be taken morning and evening with some betel-leaf, or in countries where this is not to be had, with cold water. If the body be cleansed from foulness and ob-

* R. Antimon. Sulphureti Præcipit. ℥j.

Hydrargyr. Chloridi, ℥j.

Pulv. Gum. Guaiac. ʒj.

Syrup. Simpl. q. s. M.

Fiant pilulæ xxx. Capiat. j. vel. ij. mane et nocte, quotidie, cum Decoct. Sarsaparil. Compos. Oss.

* Take Precipitated Sulphur of Antimony, two scruples.

Chloride of Mercury, one scruple.

Powdered Gum Guaiacum, one drachm.

Syrup, a sufficiency to form the

mass, out of which let thirty pills be made. One or two of these may be taken night and morning, with half a pint of the Compound Decoction of Sarsaparilla.

structions by gentle cathartics and bleeding before the medicine is administered, the remedy, we are told, will act more speedily.

When an amputation of the diseased limb is submitted to, in consequence of the great encumbrance, a proper discharge should, for very obvious reasons, be promoted from the other leg by means of an issue, or from the end of the stump itself, provided the amputation has been made below the knee.

ELEPHANTIASIS GRÆCORUM, GREEK ELEPHANTIASIS; LEPRO TUBERCULATA, TUBERCULAR LEPROSY; LEPRO HEBRÆORUM, HEBREW LEPROSY. 1

THIS most hideous disease is happily but seldom met with in this country, though comparatively common in hot climates; the only instances which have come to our notice in England have been in natives, or residents of the West Indies.

“It is characterised by an eruption of tubercles of variable size, prominent, soft to the touch, at first of a reddish or livid colour, but subsequently becoming fawn-coloured, or brownish.” They are sometimes indolent; at others, on the contrary, they are painful when touched. The disease may appear on any part of the body, but it most commonly attacks the face, nose, ears, lips, and lower extremities, and may be partial or general.

Symptoms.—Small patches of skin are observed (generally about the neck or face) to have a different colour from the surrounding surface, and gradually to become slightly raised, and lose almost all ordinary sensation; though in some cases it is said that they become very tender and painful. These increase with more or less rapidity, and frequently degenerate into ill-conditioned, intractable ulcers. In numerous cases of this loathsome disease which we met with in the West Indies, it had extended to the bones of the toes, and caused their separation from the foot, one after another gradually falling off, and apparently giving the miserable patient but little annoyance. The mental as well as the physical powers appeared greatly diminished, and little beyond mere animal propensities remained. It is not unusual for the voice to become small and weak, the sight and sense of smell absent, and thus the subject of this fearful malady is reduced to a condition of most abject dependency; loathsome, neglected, shunned, he gradually, and almost imperceptibly, sinks into the grave.

Nothing is clearly known of the real nature or cause of this disease; it is generally considered hereditary, and in the West Indies is confidently looked for in families where it has once appeared. So far as we know, it is incurable; we have used all the reputed remedies, without seeing any benefit of a lasting nature; but others have attributed cures to the influence of liniments and blisters, applied early to the altered skin, and considerable benefit is said to have followed the internal administration of the preparations of arsenic, iodine, mercury, sulphur, and the juice or

powdered root of the Mudar (*Aselepias gigantea*), given in doses of six to ten grains of the powdered root three times a day, combined with warm baths, opiates, change of climate, and avoidance of salt or fish diet.

Vide Manual of Diseases of the Skin, from the French of MM. Cazenave and Schedel, by Dr. Burgess; Johnson and Martin on Tropical Climates.

LEPRA, OR SCALY LEPROSY.

LEPRA VULGARIS is one of the three true scaly diseases of the skin, and consists in circular red patches, on which are developed incrustations of cuticle. It is essentially a disease of the system at large, and probably traceable to the blood for its origin. It commences by small red spots, on which very thin white scales are soon formed; these gradually extend by spreading circularly, the circumference of the patch being slightly more raised than the centre. The situations in which they most commonly commence are the front of the leg, just below the knee, and the fore-arm, near the elbow, where the bones are but thinly covered. The scales, though originally small and few, frequently increase to such an extent as to cover the greater part of the body; the face, scalp, and hands, usually escape; they soon fall off, and are replaced by fresh layers of greater thickness; they differ in size from mere points to that of the palm of the hand. As the circumference spreads the centre often recovers, thus forming mere rings. They are rarely attended with much inconvenience beyond their unsightly appearance, though when numerous around the joints, they may impede motion, and become painful, by producing cracks in the skin. Little or no constitutional disturbance occurs, but, on the contrary, when the health has previously been deranged, a marked improvement often takes place on the appearance of the eruption. Lepra is usually a chronic disease, and obstinate in proportion to its duration; it rarely spontaneously recovers, and even when cured is very apt to return. No marks remain after the disease has subsided; it is not contagious, but is said to be hereditary. Persons of all ages are subject to it, and it is more common in males than in females, in autumn than at any other season.

An over-nutritious diet, the presence of some source of irritation of the skin, as flour, iron-rust, &c., great mental emotions, gastric disturbance, spirituous liquors, salt and fish diet, and syphilis, predispose to it. It appears, also, frequently associated with the rheumatic diathesis.

It can scarcely be confounded with any other disease than psoriasis, from which it may be distinguished by its circular outline, raised circumference, and depressed centre, by disappearing first from the interior of the patch, and by the general absence of fissures. Psoriasis, too, is more frequent on the fleshy parts of the body; varieties have been made to depend on the colour of

the scales, &c. ; when pale, and in small patches, it has been called *lepra alphoides*, and a darker one *lepra nigricans*.

This disease is unattended by danger, difficult of cure, and often incurable. The treatment of *lepra* consists in an attempt to restore the functions of the skin, and other secretive surfaces, by a course of alteratives variable according to the particular character of each case.

In the first place the warm bath affords us a valuable means of freeing the skin from any source of irritation, and promotes the secretions of the perspiratory and sebaceous glands, as well as assists in separating the scales. This, combined with the adoption of a spare diet, and the occasional exhibition of an aperient, may suffice to cure many cases of *lepra* if early commenced. In a large proportion of these cases the liver will be found to perform its functions but imperfectly, the bowels being habitually confined, the urine high coloured, the tongue furred, and perhaps the skin and mucous membrane of the eye having a slight bilious tinge. Under these circumstances we may prescribe small doses of blue pill, or grey powder, every night, to be followed in the morning by a black draught. These having been given two, three, or more times, till the secretions of the bowels are natural, a tonic mixture may follow, composed of quinine gr. i., magnesian salts ℥ss., dilute sulphuric acid ℥xx., compound infusion of roses ℥j., to be given three times a day.

For patients from hot climates, whose skin and liver are inactive, the warm bath, combined with the use of the following lotion, to be applied to the surface generally by a sponge, every night and morning. Nitro-hydrochloric acid ℥j., water Oij. ; if the patients can bear the nitro-hydrochloric acid bath, so much the better ; they should also take the acid internally, in doses of ℥x. three times a day.

When no other evidence of functional disturbance occurs, the following external applications may be used : oxide of zinc ointment, or a compound of the ointment of nitrate of mercury ℥j. or ℥ij., to lard ℥j., or ioduret of sulphur gr. x., lard ℥j., together with the warm bath or the acid or sulphurous vapour bath, and the administration of the arsenical solution in doses of ℥ij—x., three times daily, or tincture of cantharides ℥ij—v., once or twice a day, or liquoris potassæ, ℥x—xxv., given in beer, or of Donovan's solution, ℥v—℥ss., or De Valangin's solution, ℥ij—x., three times a day. In those cases in which *lepra* is associated with syphilis, the Donovan solution has often the best effect.

All these remedies will require long continuance ; and as one disagrees with the stomach, another may be substituted ; and in many instances, where none of them singly will suffice to produce a cure, a combination will often succeed.

The nitro-hydrochloric acid bath may be made by adding as much of the acid to warm water as will make it as sour as weak vinegar ; perhaps about ℥ij. to gall. xxx. in a wood tub, or bath.

PLICA POLONICA VEL TRICHOMA, OR PLAITED HAIR.

PLICA POLONICA is a disease in which a morbid matter is deposited upon the hair, and binds it together in such a manner that to unravel it is impossible. In Poland, Lithuania, Hungary, Transylvania, Prussia, Russia, and Tartary, it is endemial; but the scalp is not its only seat, for it sometimes extends to the hair of the pubes.

The exciting causes of the disease are uncertain, as neither the air, water, nor food, seem to have any effect in producing it; nor are cleanliness and regular combing of the hair, it is said, any defence against it. Certain it is, however, that it prevails only among the lower class of people, and who are neglectful of personal cleanliness, for the opulent are generally exempt from pliea, and the disease is pretty generally met with among the poor who live in filth and misery, particularly among the Jews, a race of people very negligent of cleanliness both in their persons and dwellings. From some observations made by Mr. Frederiek Hoffman, surgeon to the Prussian army, it appears that a predisposition to it may be transmitted from the parents to their offspring; and he observes*, that, as no other cause can be assigned for the disease, it is probable that it arises, according to the general opinion, from contagion; a contagion which, like that of psora, can be communicated by contact only.

I confess that I look on pliea polonica as a mere local disorder arising from a great length of hair, and neglect of combing it, and produced evidently by sweat, dirtiness, and vermin; for the hair, when kept short, and due cleanliness is observed, never contracts pliea, as I am informed. The military police enforces this on the Polish militia and recruits every year; and if any of them happen to have the pliea, their locks are cut off, and their heads shaved without scruple or danger.

We are told by Mons. Alibert, physician to the Hospital of St. Louis, at Paris†, that as the Poles rarely comb, and scarcely ever wash or clean their hair, which they suffer to grow very long; and as they wear warm fur caps, the disease in question is much favoured thereby. By the heat, he says, an afflux of humours is determined towards the head, which thus becomes a common sewer to all the organs of the body, whilst by its nastiness the pores are so obstructed, that the exuberant fluids are forced through the canals of the hair. He observes, that pliea is sometimes communicated by contagion, and sometimes by suckling, but he has noticed at the same time that strangers are but little liable to be affected by it.

* See his Observations on Plica Polonica, vol. iv. part ii. of the Memoirs of the Literary and Philosophical Society of Manchester.

† See his Description des Maladies de la Peau.

The nature of the disease was narrowly investigated by Baron Larrey*, Inspector-General of the French Army, when at Warsaw, and he was fully satisfied that it is a local and factitious complaint, produced by dirt and neglect; likewise, that it is not contagious, and may be cured with facility, notwithstanding the absurdities which prejudice hath set forth to the contrary.

According to Monsieur de la Fontaine†, an eminent physician at Warsaw, the proximate cause of the disease seems to be a peculiar morbid matter, which is clammy and acrid, has its seat in the lymph, and is deposited critically upon the hair.

An opinion universally prevalent with the Polish peasants is, that the disease is a salutary effort of nature to expel a morbid matter from the body, and that to interrupt the course of it would be productive of danger: hence they make no attempt to cure or even palliate the complaint. This opinion is, however, erroneous, as will appear from what I have already mentioned, as well as from the occurrence afterwards recited.

Both sexes have been observed to be equally liable to the attacks of plica. It more usually comes on during infancy than after the age of puberty. Besides the human species, other animals, such as the horse, and those of the canine species, as dogs, wolves, and foxes, are said to be subject to this complaint.

The accession of the disease, we are told, is commonly preceded by general lassitude and heaviness, pains in different parts of the body, particularly in the head and eyes, and some degree of febrile affection, all of which diminish or cease immediately on the appearance of the plica. Most usually the hair of the head alone is affected, and that only in particular parts. In these the hairs grow considerably longer than in the rest, they often seem greatly enlarged in their diameter, and are much knotted and entangled; being also covered with the viscid matter which issues from their roots, and which assists in glueing them together.

In proportion as the quantity of this gluten and the implication of the hair increase, it is still more and more difficult to clean and comb it; hence a degree of phthiriasis is produced, and the head contracts an extremely fetid smell, to which, however, the Polish peasants are so much accustomed, that they endure it without complaint or any manifest inconvenience.

In consequence of frequent scratching, the nails of the fingers being imbued with the matter, now and then become diseased; they increase in thickness, change their colour, and are unequal on their surface.

The disorder frequently continues for life, when neglected; but is not found to be attended with fatal consequences, except perhaps from an injudicious mode of treatment.

* See his *Mémoires de Chirurgie Militaire et Campagnes*.

† See article the first, vol. the 1st, of the *Annals of Medicine for the Year 1795*, by Andrew Duncan, M.D.

In the beginning of the disease, we are recommended by Mons. de la Fontaine to employ resolvent, attenuant, saponaceous, demulcent, and emollient remedies, to prepare the morbid matter for a crisis. If these be not sufficient, he adds extract of aconite, or hemlock, the submuriate of mercury, or some antimonial. If it be complicated with lues, muriated mercury in small doses produces the very best effects, but salivation is highly detrimental in every case.

These remedies can only be employed when no fever is present; in this case blood-letting and evacuations must be used very cautiously. Mons. de la Fontaine compares the disease to the small-pox, and observes, that when the fever is too weak to produce the eruption, it must be increased; when it is too violent it must be diminished. Hence the strength of the patient must often be supported with a generous diet. To bring about a crisis, we are advised to make use of sudorifics.

If the morbid matter be deposited on the surface of the body, it occasions malignant and obstinate sores, which give a great deal of trouble. Antimony should always be an ingredient in whatever medicine we administer.

When our endeavours prove inadequate to produce the crisis, inoculation of the disease will often, it is alleged, effect it. This is performed by putting on a cap which has just been worn by one who has a recent plica. After a complete crisis, the plica separates from the head, and remains attached only by the sound hair. If it has become dry, and all symptoms have ceased, it may be cut off.

External remedies are always proper and necessary; such as the application of warmth to the head in the form of vapour, warm bath, or fomentation: washing the head with a warm solution of soap will likewise prove serviceable. Hair-powder rubbed with mercury will be a good remedy to destroy the vermin. Where the patient is much incommoded by a headache, the application of a blister to the neck or between the shoulders may possibly relieve it.

It has before been stated, that the opinion generally entertained in Poland, that there is danger in cutting off the hair in this disease, and promoting the cure by external remedies, is wholly erroneous. The following fact, which occurred at Breslau, and communicated by Dr. De Carro of Vienna, in a letter to the editors of the *Bibliothèque Britannique*, fully establishes this assertion.

“Some years ago, one-third of the recruits of the regiments of artillery brought from South Prussia, were attacked with plica polonica. An order was received from Berlin to send to that city all those who were infected, and to take care that the disease was not communicated to others. This order, it appears, was not agreeable to the commanders of companies, as it would have occasioned the loss of at least 200 young soldiers. M. Hœnel, surgeon-major to the artillery regiment, became mediator in the case; he caused

the recruits to be brought on the ramparts, and ordered that a general shaving should be made. In a little time, a pile of plica was accumulated; these trophics were then cast into a ditch, and the heads of the men carefully washed with soap and water daily for some weeks: by this simple method those dirty Polanders were speedily transformed into good soldiers, without having in the least suffered by the loss of this precious ornament of their heads."

This statement clearly points out the absurdity of the opinion entertained by the generality of the Polanders, and shows that the disease in question may be cured with as much safety as *tinea capitis*.* It likewise evinces that many of the external remedies which have been advised in the latter may be employed with advantage in the former: indeed, *tinea capitis* and *plica polonica* seem, I think, to be very similar diseases.

SCORBUTUS, OR SCURVY.

THE characteristics of this disease, as affixed by Dr. Cullen, are debility; bleeding of the gums; spots of different colours on the skin, for the most part livid, particularly at the roots of the hairs, occurring in cold countries, after living on putrescent, salted animal food, with a deficiency of recent vegetable matter.

The scurvy is a disease of a putrid nature, more prevalent in cold climates than in warm ones, and which chiefly affects sailors, and such as are shut up in besieged places; owing, as is supposed, to their being deprived of fresh provisions and a due quantity of accscent food, assisted perhaps by the prevalence of cold and moisture, and by such other causes as depress the nervous energy; as indolence, confinement, want of exercise, neglect of cleanliness, much labour and fatigue, sadness, despondency, &c. These several debilitating causes, with the concurrence of a diet consisting principally of salted or putrescent food, and foul water, will be sure to produce this disease. It seems, however, to depend more on a defect of nourishment than on a vitiated state. As the disease is apt to become pretty general among the crew of a ship when it has once made its appearance, it has been supposed by many to be of a contagious nature; but the conjecture seems by no means well founded. The circumstance arises most probably from the men being alike exposed to the exciting causes of it.

A preternatural saline state of the blood has been assigned as its proximate cause. It has been contended by some physicians, that the primary morbid affection in this disease is a debilitated state of the solids and putrescency of the fluids, arising principally from the want of aliment. We shall presently show how far this opinion is correct.

* See vol. vi. p. 27. of the Medical Transactions of the London College, for a paper to this purport.

Various theories have, indeed, been advanced with respect to scurvy. By Sir John Pringle it has been supposed to be owing to a putrescency of the blood. By Dr. Lind, Dr. Blane, and Dr. Millman, it has been looked upon as a disease of debility, having its origin in the weakness of the organs of digestion, or in the gradual diminution of the vital power by the remote causes; or that it is owing rather to a defect of nourishment than to a vitiated state of it. At the present day it is useless to record hypotheses; for it is now well ascertained, that salt provisions, or such as have become injured by keeping, or vitiated air, or filth, or cold, or moisture, or depressing passions, or inactivity, or all of these together, are inadequate to the production of scurvy if there be a sufficient supply of fresh vegetables or fruits, or of some of those productions of the vegetable kingdom which experience has proved to be available substitutes for those in more common use. It has been proved too, on the other hand, that abundance of fresh provisions, consisting of meat and bread and the like, afford no protection from scurvy, if there be a want or deficiency for a long continuance of time of all succulent vegetables and acescent fruits, and of all other antiscorbutics, such as we shall presently describe them.

The scurvy comes on gradually, with heaviness, weariness, and unwillingness to move about, together with dejection of spirits, anxiety, and oppression at the præcordia, considerable loss of strength, and debility. As the disease advances in its progress, the countenance becomes sallow and bloated; respiration is hurried by the least motion; the teeth become loose; the gums are spongy, swelled, and bleed upon the slightest touch; the breath is very offensive; livid spots appear on different parts of the body; old wounds, which have long been healed up, break out afresh and discharge a fetid or bloody sanies, their base being covered with sloughs, and their edges of a livid colour, and lined with a soft, bloody fungus; severe wandering pains are felt, particularly by night; the skin is dry; the urine small in quantity, and the pulse is small, feeble, generally slow, sometimes frequent, and towards the last intermitting: but the intellects are for the most part clear and distinct. In some cases of scurvy, and even in its incipient stage, nyctalopia has been observed as one of the attendant symptoms.*

By an aggravation of the symptoms, the disease in its last stage exhibits a most wretched appearance. The joints become swelled and stiff, the tendons of the legs are rigid and contracted, the patient loses all use of his limbs, general emaciation ensues, hæmorrhages break forth from the nose, ears, bladder, and anus, fetid and bloody evacuations are discharged by stool, and a diarrhœa or dysentery arises, which soon terminates the tragie scene.

There are some peculiarities of scurvy deserving to be dwelt

* See Dr. Blane's work on the Diseases of Seamen.

upon a little more at length. One of its most characteristic symptoms is the spongy condition of the gums, which are at times so swollen as to project beyond the crowns of the teeth; their livid colour, too, contrasts strongly with the pallid hue of the tongue, and inside of the lips and cheeks. The teeth are generally more or less loose, so as sometimes to come out. The state of the gums is often a source of much pain and distress to the patient, since they are very tender; and this, together with the looseness of the teeth, renders mastication difficult or impracticable. Hence, probably, arises the emaciation observable in advanced cases, which yet is not an invariable accompaniment of the disease, nor necessary to the extreme debility which characterises it throughout. A point of much interest, which has been dwelt upon by Dr. Budd in his able *Treatise on Scurvy*, in the *Library of Medicine*, is the frequent occurrence of effusions of blood between the periosteum and the bone, by which node-like projections are produced. These he has described as occurring sometimes on the shin-bone, and frequently also on the lower jaw, and these swellings, as we have ourselves witnessed in one instance, are very tender to the touch.

There is something very characteristic in the feeling communicated to the hands by the swollen state of the lower extremities in scurvy. Where this exists there is a board-like hardness, which seems to pervade the skin itself and all the subjacent structures, which contrasts strongly with the soft, doughy feel of common anasarca, and is quite distinct from the less yielding but somewhat elastic character of the swellings in inflammatory dropsy. This hardness no doubt arises from the infiltration of the tissues by the solid fibrin instead of by the more watery components of the blood; and the same material produces the inflexibility of the joints when it is poured out around their capsules and about the tendons by which motion is communicated to them in health.

It is a remarkable fact noted by Dr. Budd, to whose article we are largely indebted in the present sketch, that although in scurvy there is such a tendency to ulceration that any breach of the surface, as from a scratch, will readily give rise to it, though wounds which have been healed for years will break out again, and even fractures long consolidated become disunited, yet there is little or no proneness to the formation of bed-sores as a consequence of pressure alone. Notwithstanding the extreme debility from which he suffers, and his long confinement to one unvarying position in bed, the patient is exempt from the evils arising from the extensive sloughings of the skin which in other instances bring so much pain and peril to the sufferer. Effusions, whether of blood or fibrin, are never followed by suppuration, and do not give rise to exfoliation when occurring between the periosteum and bone. These all disappear and leave no trace of their previous existence, when proper treatment has restored the patient to his ordinary health.

The skin is apt to be dry, marked in places with minute longitudinal wrinkles, and exhibiting, more or less, a bran-like exfoliation of the cuticle. The epidermis, too, often separates in large and thick scales where it covers purple ecchymoses on the legs.

The debility in scurvy is extreme, augmented, no doubt, by very considerable hæmorrhages, whenever such occur, but existing independently of, and out of proportion to, these; arising, as we believe, more from a vitiated state, than from defective quantity of the blood. Be this as it may, it is certain that the exhaustion in the worst cases is such as to render any muscular exertion, however slight, always perilous, and often fatal. Dr. Budd quotes from the narrative of Lord Anson's voyage, to the effect that "many of the people, though confined to their hammocks, ate and drank heartily, were cheerful, and talked with much seeming vigour, and in a loud and strong tone of voice, and yet on their being the least moved, though it was only from one part of the ship to the other, and that in their hammocks, they have immediately expired; and others who have confided in their seeming strength and have resolved to get out of their hammocks, have died before they could well reach the deck. A more than usual exertion seems at times, too, to have been suddenly fatal to such as were strong enough to walk about."

It is well known that in former times scurvy was of frequent occurrence on land as well as at sea, and that it has appeared from time to time even of late years, especially among such persons as have been subject to the dietary of our prisons and mad-houses, where the supply of fresh provisions furnished to the inmates might well disarm apprehension of the attacks of such a scourge. We believe that it is again upon the increase, as a consequence of the general failure of our crops, and perhaps more particularly as a result of a want of potatoes, so common an article of consumption among all classes, and with regard to which it has been shown by Dr. Baly, that in the state in which they are ordinarily eaten, they possess antiscorbutic powers probably not inferior to those of any other article of food. We shall recur again to this subject presently, and only now state the impression produced on our own minds by the facts adduced by the author just referred to, that, considering the small extent to which the poor are partakers of undressed succulent vegetables, and the few occasions on which they can afford to indulge in the luxury of fresh fruits, it is not improbable that we are more practically indebted to the potato for the cessation of scurvy on land, than to all the other antiscorbutics put together.

The agency of salt or stale provisions in the production of scurvy having been satisfactorily disproved, and the disease having been shown to depend upon a deficient supply of certain vegetables containing ingredients required for the healthy composition of the blood, there appears to be no difference in the origin of this malady

whether it arise at sea or on land, neither is there any such difference in the nature of their symptoms as warrants their being considered distinct; such diversities as are observed being rather those of degree than of kind, so that there is no occasion for here speaking of them separately. We have ourselves, besides, applied the same treatment successfully to both.

The only disease which at all resembles scurvy in its nature and character is purpura; but in this latter complaint there is neither the sponginess of the gums, nor the dusky and sallow hue of the skin observed in scurvy, nor again those infiltrations of solid matter, giving such hardness to the limbs and inflexibility to the joints. Scurvy is a disease of gradual formation, purpura often attacks suddenly; scurvy on land appears for the most part in the end of winter or beginning of spring, purpura is most common in summer and autumn; scurvy is caused by continued abstinence from certain vegetable juices, and is cured by free supplies of them; purpura cannot be traced to the same cause, nor benefited by the same treatment. It is an error to suppose that the blood does not coagulate at all, or coagulates feebly in scurvy. The change which takes place in this fluid consists in a much diminished proportion of the solids contained in a given weight; and this is dependent entirely on the great deficiency of the red particles, which are found, in the average of three analyses made by Mr. Busk, and cited in the first volume of the English edition of Simon's Chemistry, to amount only to one half of their normal quantity. The albumen, on the contrary, is somewhat increased, and the fibrin and salts, according to the same authority, attain to almost double the weight observed in those of healthy blood.

Dr. Budd has described the appearances which he discovered after death in three cases of fatal scurvy, one of which, however, was complicated with Bright's disease of the kidneys.

The general inferences which he draws from his observations, detailed at length, are, that in the bodies of those who die of scurvy the chief indications of that disease are met with in the colour of the skin, in the state of the gums, and in the presence of fibrinous effusions, and of ecchymoses or effusions of blood. These effusions occur most frequently in the skin in the subcutaneous cellular tissue; and between the muscles of the lower extremities; between the peritoneum and the bones of the lower extremities and the jaws; and in the peritoneal coat, and in the muscular and mucous coats of the intestinal canal. The numerous traces of hæmorrhage observed in the coats of the intestines are in accordance with the frequency with which scorbutic persons pass blood by stool. "Our observations," he goes on to say, "furnish us with no information respecting that fluid, except that it is deficient in red particles; that it has not lost the property of coagulating, and that it does not impart a stain to the lining membrane of the heart and vessels."

The bile in these examinations is said to have been found of a more yellow and paler colour than usually belongs to it.

If the view which we have taken of scurvy, as arising from deprivation or deficiency of certain articles of diet required for the maintenance of the healthy constitution of the blood, be correct, (and we refer our readers for the proof of this position to the article of Dr. Budd already mentioned, and to the paper of Dr. Baly on the prevention of scurvy in prisons, published in the 31st volume of the London Medical Gazette,) it is evident that our chief aim in the treatment, whether preventive or curative, must be to learn what these articles of diet are, and to secure an adequate supply of them. For the preservation of the general health of men, whether on sea or land, attention to cleanliness and temperance, to the purity of the air they breathe, and of the water they drink; protection from the inelemencies of the weather, from the combined influences, more especially, of cold and moisture, and the exclusion as far as possible, of inactivity, listlessness, and despondency, are both desirable and necessary. These means may conduce in some, though but in a slight degree, to ward off the inroads of the disease of which we are speaking; but we protest against their being substituted for, or allowed to supersede, those other measures, the efficacy of which has been so fully established by the results of a most extensive experience.

Of all substances endowed with antiscorbutic virtues, there are probably none which possess them in so eminent a degree as lemons and limes, and other kindred fruits. This property is found to reside in their juices, is diminished or destroyed by subjecting them to the action of heat; and is not retained by the crystallised citric acid obtained from them, nor by any artificial chemical compound at present known. Of the efficacy of these juices, and of their successful use in the prevention of scurvy, we have the amplest evidence in the medical history of the Royal Navy. It appears that, in the year 1795, a regular supply of lemon-juice was first furnished to the sailors by order of the Admiralty, on the suggestion of Dr. Blair and Sir G. Blane. The juice is preserved by the addition of one tenth of its amount of strong brandy, and a fluid ounce of it with an ounce and a half of sugar is served daily to each of the men on board after ships have been a fortnight as sea. Sir G. Blane, in his paper published in the sixth volume of the Transactions of the Royal Medico-Chirurgical Society, gives most convincing testimony of the benefits resulting from this measure. "The scurvy," he writes (at page 495.), "a disorder incident chiefly to a sea life, but by no means peculiar to it, has been nearly eradicated by lemon-juice, or more properly the citric acid; for the juice of limes, Seville oranges, unripe China oranges, and, in short, of all the species of the botanical genus *Citrus*, or the natural order of fruits called *Hesperidæ*, possess the same virtue." In addition to this general commendation, we find the fact stated in the same paper, on the authority of Dr. Lind, that

in the year 1780, one thousand four hundred and fifty-seven men, ill of scurvy, were sent to Haslar Hospital from the Channel fleet, whereas at a later period, that is, about the year 1815, one of the physicians of this establishment informed the author that he had seen but one case of it there for the last seven years; and one of the physicians to Plymouth Hospital reported that only two cases had occurred to him in the last four years. "Those only," says Sir G. Blane, "who have made themselves acquainted with the early part of the naval history of this country, or those who have perused the interesting, popular, and eloquent narrative of Commodore Anson's voyage, in which the distresses and calamities, the dreadful sufferings and mortality arising from the sea scurvy are depicted, can duly appreciate the value of this simple remedy. The power it possesses over this disease is peculiar and exclusive when compared to all other alleged remedies." "It is a certain preventive as well as cure." "The author," it is added in a note, "has never seen the scurvy resist the citric acid; and in the perusal of several hundreds of surgeons' journals, he has met with only two cases which seemed to resist it." Such testimony as this needs no support, or we might cite in corroboration of it abundant instances of the successful employment of this remedy both at sea and on land, and produce our own individual experience in those cases which the recent extraordinary prevalence of this disease has enabled us to observe.

But if antiscorbutic powers are possessed in the greatest degree by the juices just mentioned, they do not appear to be confined to them; other acid fruits, as unripe grapes, unripe apples, and the juice of the apple in its fermented state forming cyder, are endowed with like properties; and there is reason for believing that the protective power is in some measure dependent upon their acidity. It has been ascertained, at all events with regard to the guava, that although it is an efficient preservative in its immature or acid condition, it is no longer so in a state of complete ripeness; yet that acidity, in every variety, is not the condition upon which this valuable quality depends, is proved by the fact that the mineral acids are in this respect inert, and that of organic acids, vinegar, or acetic acid, is comparatively powerless. It has been already mentioned, that the crystallized citric is devoid of the virtues possessed by the juice from which it is obtained, and the same may be stated of the tartaric and probably of other acids. But, besides the acescent fruits already mentioned, other vegetables of a wholly different aspect and character have been found to afford protection against scurvy. Yet with regard to these, as to the juices before spoken of, it is found that their virtues are impaired or annihilated by subjecting them to heat in the process of cooking. The vegetables of which we are now speaking belong to the order of Cruciferae, including the cabbage, turnip, radish, water-cress, and other common esculents. As regards these, the water-cress and radish, from being eaten raw, are probably among the most useful;

while, for the same reason, the sour kroust of the Germans, prepared from the cabbage by spontaneous fermentation, is a valuable defence against the attacks of scurvy. One plant of this order, the *Cochlearia officinalis*, has obtained its familiar name of scurvy-grass on account of its specific powers. Of this Dr. Woodville says, in 1790, that "it has been long considered the most effectual of all the antiscorbutic plants;" and Dr. Gray, in 1821, speaks of this and of the sea scurvy-grass together as the most valuable of antiscorbutics when eaten raw, or when their expressed juices are taken.

In addition to these articles, an infusion made from the buds and tops of some varieties of fir, as the *Abies rubra* and *Pinus sylvestris*, is found to be eminently antiscorbutic, as also spruce beer, or the fermented liquor obtained from this infusion. Infusion of malt, too, in the form of sweet wort, or the same fermented, as small beer or porter, has obtained considerable repute: wines appear to be beneficial also, while the use of spirits in reference to this disease is of doubtful advantage; some high authorities having even deemed them hurtful.

It has long been known that potatoes when raw are antiscorbutic, but in this state they must be somewhat unpalatable and indigestible also. Dr. Baly has established the important fact already mentioned, that when dressed in the ordinary way they still retain this valuable quality. He was led to this discovery in 1840, by observing that scurvy was a disease of rather frequent occurrence amongst the military offenders confined in the Millbank Penitentiary, under sentence of court-martial, whilst it was never seen among the other more numerous convicts. A comparison of the respective dietaries of these two classes showed a total absence of potatoes in that of the soldiers during the first six months of their confinement, while five pounds of potatoes were allowed to each of the other convicts from the beginning. There was, besides, the omission of pea-soup with fresh vegetables as an item of the soldiers' diet, and the correction of this deficiency was made in the winter of 1840-41, yet scurvy still appeared among them to almost the same extent as before the change.

An allowance of potatoes amounting to two pounds weekly for the first three months, three pounds during the second three months, and four pounds after the expiration of six months, was then added to the dietary of the military prisoners, and we read in February, 1843, that not a single case of scurvy had since occurred. The inference deducible from this result is confirmed by a statement of similar observations in other prisons, in which the addition of potatoes to the dietary was followed by the disappearance of scurvy where it had previously been common.

Dr. Baly gives the following summary of the conclusions drawn from his investigations on this subject. "The facts, then, which I have been able to abstract from the reports of the prison inspectors, powerfully corroborate the results of my own experience as to the

value of potatoes in preventing scurvy. Wherever this disease has prevailed, there the diet of the prisoners, though often abundant in other respects, has contained no potatoes, or only a very small quantity (as at Wakefield). In several prisons, the occurrence of scurvy has wholly ceased on the addition of a few pounds of potatoes being made to the weekly dietary. The circumstance that the reports make no mention of the prevalence of scurvy in certain prisons where the nature of the food would lead us to expect it, I have shown to be capable of explanation. I shall only add, that there are many prisons in which the diet, from its unvaried character, and the absence of animal food as well as green vegetables, is apparently most inadequate to the maintenance of health, and where, nevertheless, from its containing abundance of potatoes, scurvy is not produced. Stafford County Goal may be taken as an example. In this prison, the weekly allowance of food consists of twelve pounds and a quarter of bread, twenty-one pints of gruel, seven pounds of potatoes, and a sufficient quantity of salt. Neither meat nor soup is tasted by the prisoners, yet scurvy does not occur. I have recently had the opportunity of examining seventy prisoners who had been confined in Stafford Goal for periods varying from three to six months, and I could not find one who presented any trace of scorbutic disease."

Scurvy, it must be remembered, is the result of deprivation, not for a few days only, but for a considerable time, of all vegetable antiscorbutics. Dr. Baly reckons from three to six months restriction to a diet deficient in succulent vegetables requisite for its full development. It is altogether in accordance with his views that while we are writing, and for several weeks past, after an autumn and winter in which the scarcity and dearth of potatoes has deprived the poor of their ordinary use of them, we hear and we have witnessed the occurrence of scurvy in numerous instances; so that there appears to be a fresh and epidemic outburst of a disease which of late years has been but little known among the population at large. It is true that there is not of necessity any direct connection between the failure of our potato crops and the prevalence of scurvy; but it is quite as probable that the latter is an immediate as that it is an indirect consequence or effect of the former. The general culture of the potato in Ireland has been at times inveighed against as a source of much evil; what is written above may serve to prove that we are indebted to it for greater benefits than we were conscious of, and to warn us of some perils that might attend its disuse, if from necessity or choice it should ever cease to be an article of ordinary consumption among the poor.

In a treatise on Scurvy, by Mr. D. Patterson, surgeon in the Navy, we are informed that for certain reasons he was induced to try a solution of the nitrate of potass in common vinegar in several cases of this disease, which, with inexpressible pleasure, he saw to succeed in every one of them; and from frequent trials of it, he is

convinced that the scurvy may be cured at sea without the assistance of recent vegetable matter.

At first he dissolved two ounces of nitre in one quart of the ship's vinegar, and gave half an ounce of the solution (which he named acidum nitrosum, or nitric vinegar), to some twice, to others thrice in the day, and as frequently bathed their blotched and ulcerated limbs with the same. From the good effect it had, and from its not producing the smallest degree of nausea, colic, or diarrhoea, he was induced to augment the dose to an ounce, and to repeat it as often as before.

Finding by far the greater number of scorbutics who were under his charge bore the increased dose of the medicine without expressing the least uneasiness, he now, instead of two, dissolved four ounces of nitre in one quart of vinegar, and gave from half an ounce to two ounces of this strong solution twice, thrice, or four times in the day, if they were either blotched, stiff, or ulcerated. In this manner, we are informed, he continued to use it.

Mr. Patterson, in comparing the effect of vegetable acid with that of the nitric vinegar, writes as follows: — "In the month of July, 1794, at sea, a small quantity of limes was purchased by order of Admiral Murray, for the use of the scorbutics at that time on board; but instead of depending altogether on their power, I gave them only to a certain number, on purpose to compare their effect with that of the nitric vinegar, which was more generally administered; and from what I have seen of both, and after having weighed all circumstances, I am at present inclined to decide in favour of the latter."

"The beneficial effect of the nitrate of potass in scorbutus," says Dr. Kerr, in the *Cyclopædia of Practical Medicine*, "has been more recently testified by Mr. Charles Cameron, surgeon in the Royal Navy, in a letter dated December 10. 1829, to the Commissioners for Victualling. 'The Fergusson,' he states, 'sailed from Ireland on the 16th of December, the preceding year, with 216 male prisoners, amongst whom scorbutus, in several instances, combined with dysentery, prevailed to a considerable extent.' Having on several occasions experienced the excellent effects of the solution of nitre as recommended by Patterson, he was induced to employ it. 'From the moment I commenced the use of it,' he observes, 'many although almost hopeless cases began to improve rapidly, and before we accomplished one-third of our voyage, I found the health of the sick improve so fast under the new treatment, that I did not think it necessary to go into any port, and on our arrival at Sydney, the general health of the prisoners was much better than when they embarked in Ireland. I am willing,' he adds, 'to ascribe much of the favourable change to the effect of climate, but I feel assured that a solution of nitre in vinegar or lemon juice is the best remedy ever proposed in the treatment of scurvy.'" Where the strong solution of nitre is to be used it will sometimes be necessary, as suggested by Mr. Patterson himself,

and always be prudent, to dilute the medicine with water before administering it, since it is well ascertained that a saturated or very strong solution of the salt in question may produce severe inflammation and death as a consequence of its irritant action on the stomach and intestines.

In the course of the disease, particular symptoms may arise which will require a separate treatment. Pains of the belly are to be allayed by emollients and opiates; oppression at the chest and impeded respiration by blisters, for bleeding is never to be used; contractions of the hams and calves of the legs are to be relieved by fomenting the parts with warm vinegar and water, and by the application of emollient poultices and frictions; sponginess of the gums and looseness of the teeth are to be obviated by washing the mouth frequently with gargles of an astringent and antiseptic nature*; and foul ulcers are to be cleansed and healed by washing them with lemon-juice, or a tincture consisting of equal parts of that of myrrh and cinchona bark, and then dressing them with some kind of digestive ointment, or a poultice of sorrel (see Ulcers). Some navy surgeons report that they have known the most obstinate ulcers of a scorbutic nature cured by applying a paste of oatmeal and water to them, the surface being sprinkled with the liquor plumbi subacetatis. In very bad cases of ulceration, it is probable that the application either of the cataplasma effervescens, or cataplasma carbonis, as mentioned under the head of Gangrene, might be attended with a very good effect.

If in the course of the disease the bowels should not be loosened by the use of fresh vegetables, and costiveness prevail, we may then advise the taking a decoction of tamarinds with a little of the potassæ supertartras, to obviate it. Or the same purpose will be answered by a sufficient dose of rhubarb, or castor oil, or of any mild aperient. There are some rules of a negative kind to be observed: thus the patient should be cautioned against making any exertion, or even hasty movement; since such, as we have seen, are sometimes followed by sudden death. It seems generally agreed that neither bloodletting, nor the use of mercury, is admissible in this disease; and that opiates are ill borne, producing troublesome headache, as we have ourselves witnessed in one case.

Our main object in the treatment must be to correct that depraved condition of the blood which is the source of all the other symptoms, and this can only be done by the administration of one or of several of those articles already spoken of as possessed of antiscorbutic virtues, and which are alike effectual for prevention or for cure. We consider the lemon or lime juice to be best entitled to our confidence: of this an ounce or more should be given

* R. Infus. Rosæ Compos. f. ʒvj.

Aluminis, ʒjss.

Mel. Optim. f. ʒij. M.

ft. Gargarisma.

* Take Compound Infusion of Roses,
six ounces.

Alum, one drachm and a half.

Honey, two drachms.

Mix them for a gargle.

three times a day, or oftener, either merely sweetened, or with wine, or in both ways; while water cresses or other succulent vegetables may be eaten with the food. To one or two of our patients, quinine was given in lemon juice; but though the cases did well, we were not satisfied that much benefit was derived from the addition. The diet should be generous with a moderate allowance of wine or beer, or of both. The condition of the teeth and gums often makes the taking of solid food painful or impracticable; on which account soups, and broths, and eggs must for a time be substituted; milk, too, may be freely taken; and there is reason to believe, after what has been said, that potatoes may be eaten with advantage. We have already spoken of an astringent wash as useful in reducing the swollen state of the gums; with the same object we have caused them to be lightly touched with the nitrate of silver, and found some benefit from its employment. If the cases be not very far advanced before the treatment here indicated can be resorted to, they will generally do well. The use of antiscorbutics may, after a time, be limited to such as can be taken with the food; and the *tinctura ferri sesquichloridi* in doses of twenty or thirty drops may be given in infusion of quassia thrice a day; or the decoction and tincture of bark be resorted to; but, at the commencement of the treatment of severe cases, there is no remedy in which we are disposed to place so much confidence as lemon juice, or lime juice, the peculiar efficacy of which, in this disease, appears a fact, as well ascertained as any within the province of medical science. Dr. Garrod has recently maintained that the proximate source of scurvy is a deficiency of potass in the blood, and has essayed the treatment of the disease by supplying this deficiency. A consideration of the varied remedies, however, which have been found effectual, will lead to the probable result, that there is probably more than ultimate principle which ministers to prevention and recovery, while none can claim the amount of evidence in favour of its efficacy which may be adduced for lemon juice.

ICTERUS, OR JAUNDICE.

THE former of these terms is considered by medical etymologists to be derived from the Greek word *ικτίς*, the appellation of the wit-wall or ferret, whose eyes are remarkable for their peculiar yellow colour. The origin of the word Jaundice, from the French *jaunisse*, yellowness, is of course self-evident.

This affection is characterized by a yellowness of the skin, more especially in the tunica conjunctiva of the eyes, a sense of pain or uneasiness in the right hypochondrium, whitish or clay-coloured motions, and a deep brandy-coloured urine, which tinges linen dipped into it of a yellow colour.

A ready mode of showing the presence of bile in the urine is to drop a small quantity of the secretion on a white plate or sheet of

writing paper, and letting fall a small quantity of nitric acid upon it. The presence of the bile will be shown by the play of colours (in which green and pink predominate) appearing where the nitric acid has fallen. In some instances objects have seemed to be of a yellow colour to the patients suffering from the affection; but the phenomenon is of rare occurrence, and its existence even denied by many writers.

The causes which may produce jaundice are,

1. Gall stones — *Icterus chololithicus*.
2. Viscid bile — *Icterus choleus*.
3. Tumours pressing on the ductus communis.
4. Acute and chronic disease — *Icterus hepaticus* of the liver.
5. Spasm of the gall duct — *Icterus spasmodicus*.
6. Retention of meconium — *Icterus infantum* in new-born infants.
7. Disease of the heart — *Icterus sympatheticus*.
8. Mental emotions.

In the vast majority of instances the disease arises from an interruption in the passage of the ductus choledochus to the current of bile into the duodenum. Sometimes, however, the proximate principles of the bile remain in the blood, and, accumulating with time, eventually lead to a jaundiced condition of the system. Dr. Carpenter states that this abnormal accumulation is habitual in some persons, and that it may be recognized by the dark, bile-tasting, mucous secretion found especially during the night on the surface of the tongue. This eminent physiologist considers the secretion to be partly eliminated by the mucous membrane of the tongue when the function of the liver is suspended.*

Chronic bilious affections are frequently brought on by drinking freely, more particularly of spirituous liquors: hence they are often to be observed in the debauchee and the drinker of drams. They are likewise frequently met with in those who lead a sedentary life, and who indulge much in anxious thoughts.

A slight degree of jaundice often proceeds from a redundant secretion of the bile; and a bilious habit is therefore constitutional to some people, but more particularly to those who reside long in a warm climate.

By attending to the various circumstances and symptoms which present themselves, we shall in general be able to ascertain, with much certainty, the real nature of the cause which has given rise to the disease.

We may be assured, by the long continuance of the complaint, and by feeling the liver and other parts externally, whether or not it arises from any enlargement or tumour in this viscus, the pancreas, mesentery, or omentum.

Where passions of the mind induce the disease, without any

* Principles of Human Physiology, p. 55.

hardness or enlargement of the liver or adjacent parts, and without any appearance of calculi in the fæces, or on dissection after death, we are naturally induced to conclude that the disorder was owing to a spasmodic affection of the biliary ducts.

It is a well ascertained fact, that biliary concretions are always formed in the gall-bladder. Impacted in this they are not productive of much inconvenience, for they are frequently found on dissection, where no symptoms during life had given occasion for a suspicion of their existence.

The form of these concretions varies with their number and the mode in which they come into contact with each other. When single, they are usually roundish; if more than one, they are angular and flattened; their section usually presents a shining crystallized surface of a yellowish brown of various shades, the darkest being at the circumference; their principal constituent is cholestérine, a white, crystallizable, fatty matter, somewhat resembling spermaceti, insoluble in water but dissolving easily in alcohol, from which it is deposited on cooling in pearly scales, their specific gravity always less than that of water, their number from one to several dozen, and their size from a pin's head to a walnut.

Where gall-stones pass into the ducts, and lodge there, acute, lancinating pains are felt in the region of the parts, which cease for a time and then return again; great irritation at the stomach and frequent vomiting attend, and the patient experiences an aggravation of the pain after eating. A pain at the top of the shoulder or right arm is another diagnostic of concretions in the gall-bladder and ducts.

When calculi are passing through the common duct into the duodenum, the symptoms are not so obscure and uncertain as when lodged in the gall-bladder. Sometimes the attack is preceded by or accompanied with, a sense of coldness in the back and lower extremities. The person is seized with a sudden, violent pain, exactly where the common duct enters the intestine. The pain is often so circumscribed, that the patient is apt to say he can cover the extent of it with a finger, and sometimes it shoots through the back, and extends up between the shoulders. Persons thus seized cannot endure a recumbent posture, but are obliged to sit up with the body bent forward, which seems to afford a slight mitigation of the pain. In most cases, the stomach is so irritable that every thing is immediately rejected. Sometimes bile is brought up, but not always; neither is vomiting a constant attendant. The intestines are invariably constipated; indeed, the whole canal appears to share in the spasmodic state induced on the duodenum by the irritating cause.

If the bile is completely obstructed in its passage into the intestine, the fæces will be of a light clay-colour, and the skin and eyes become yellow from a regurgitation of the bile into the system. Although the pain is more exquisite than in hepatitis, and is sometimes accompanied with great disturbance in the general system,

such as heat of the skin, quickness of the pulse, thirst, white tongue, high-coloured urine, with a dark-coloured lateritious sediment, still inflammation seldom occurs. Sometimes the disorder continues several hours, and then a remission of pain ensues, either in consequence of the calculus entering the duodenum, or otherwise falling back into either of the ducts or gall-bladder. After an interval of some days, or perhaps weeks, the paroxysm possibly returns again, indicating that the obstructing cause has not been removed.

Jaundice comes on with a sense of fulness in the epigastrium, languor, lassitude, inactivity, loathing of food, flatulency, acidities in the stomach and bowels, and costiveness. As it advances in its progress, the skin and tunica conjunctiva of the eyes becomes tinged of a deep yellow; there is a bitter taste in the mouth, with frequent nausea and vomiting; the urine is very high-coloured, and tinges linen yellow; the stools are of a grey or clayey appearance, and a dull obtuse pain is felt in the right hypochondrium, which is much aggravated by pressure with the fingers. Where the pain is very acute, the pulse is apt to become hard and full, and other febrile symptoms to attend.

The disease, when of long continuance, and proceeding from a chronic affection of the liver or other neighbouring viscera, is often attended with anasarca swellings, and sometimes with ascites. Petechiæ and maculæ sometimes appear in different parts of the body; the skin, before yellow, turns brown or livid; even passive hæmorrhages and ulcerations have broken out, and the disease has, in some instances, assumed the form of seury.

Where jaundice is recent, and occasioned by simple obstruction in the biliary ducts, it is probable that, by using proper means, we may be able to effect a cure; but where it is brought on by tumours of the neighbouring parts, or has arisen in consequence of other diseases, attended with symptoms of obstructed viscera, our endeavours, most likely, will not be crowned with success. Arising during a state of pregnancy, it is of little consequence, as it will cease on parturition. A gradual diminution of the sense of weight and oppression about the præcordia, a return of appetite and of the digestive powers, the stools becoming of a natural colour and easily procured, the urine being secreted in a larger quantity, and ceasing to tinge linen of a yellowish colour, are to be regarded as favourable circumstances. A violent pain in the hypochondrium or epigastrium, attended with a quick pulse, loss of strength and flesh, with anasarca swellings of the extremities, chilliness, watchfulness, melancholy, or hiccup, denote great danger.

On opening the bodies of those who die of jaundice, the yellow tinge appears to pervade even the most interior part of the body; it is diffused throughout the whole of the cellular membrane, in the cartilages and bones; and even the substance of the brain is occasionally coloured by it. A diseased state of the liver, gall-bladder,

or adjacent viscera, is usually to be met with. Calculi are sometimes found in the biliary duets.

As jaundice occurs in almost every morbid condition of the liver, and as its occurrence evidently does not depend upon a specific morbid action of that organ, some physicians have been induced to consider it only as a symptomatic affection. Under the general appearance of jaundice, we ought, therefore, by a careful investigation, to ascertain, as far as we are able, the real condition of the liver; for certainly such a discrimination must appear indispensably necessary, when it is considered that the mode of treatment must be varied according to the cause by which such an appearance is induced.

The cure of the disease, unpromising as it may at times appear, is nevertheless to be attempted, first, by restoring the interrupted passage of the bile through the duet; secondly, by carrying it off by the intestines; and, thirdly, by relieving the particular symptoms. Whether the passage of the bile is obstructed by biliary concretions, or by spasmodic constriction of the ductus communis choledochus, nearly the same plan must be adopted.

Concretions, when of a large size, frequently excite, by their great distension of the biliary duet in their passage through it, not only acute pain, but very often a considerable degree of inflammation likewise. When this is the case, much fever is apt to attend. To guard against such consequences, it will therefore be advisable, in full, plethoric habits, where the symptoms run high, to take away a quantity of blood proportionable to the state of the pulse, the severity of the pain, and the age of the patient.

Having adopted this step, we should next direct him to be put into a warm bath, in which he may be allowed to continue until some degree of fainting is excited; he is then to be removed to bed, and to take an opiate, which may be repeated every four or six hours, until ease is procured; and as the stomach is generally so irritable during the attack, that every thing taken into it is immediately rejected, especially fluids, it will perhaps be the best way to administer it in a solid form, as that of a pill. Besides these means, we may advise the application of a bladder filled with warm water immediately over the region of the part which is most painful. Throwing up emollient elysters may serve as internal fomentations. Small nauseating doses of antimonials, or of the pulvis ipecacuanhæ compositus, together with a free use of diluting liquors, might probably afford some relief.

With the intention of pushing forward biliary concretions, vomiting has been much employed in jaundice. In recent cases, where we have no reason to suspect the concretion to be of any great magnitude, and where the pain is not acute, this remedy may be attended with a good effect, by compressing, during its operation, the distended gall-bladder and biliary vessels; but in cases attended with acute pain and a considerable degree of fever, by which we

are made acquainted with the presence of inflammation, vomiting would certainly be very likely to prove injurious.

An interesting case of inflammation of the gall bladder, proceeding from biliary calculi, and terminating in suppuration, which at length pointed externally, came under my observation some years back. The patient was a woman of about forty years of age, who for a considerable time had been severely afflicted with pain in the stomach, febrile heat, faintings, and a purging. After a month or so, there arose a swelling near the navel, which, upon being opened, discharged a quantity of yellow matter for many days. The pain becoming very acute in the tumour, the surgeon was induced to introduce his probe into the orifice of the wound, when, to his astonishment, he found a hard gritty substance at the bottom of it, which, upon being discharged a few days afterwards, proved to be a gall-stone of the size of a common nut. This was shortly succeeded by another, and in due time the woman's health was perfectly restored.

In many instances it seems probable that there is not much pain produced whilst a calculus of a moderate size is lodged in the gall-bladder, or even in the biliary ducts, until it arrives at that part where the common duct perforates the intestine; which opinion seems confirmed from cases reported by writers of the first respectability, where biliary calculi have been met with, on dissection, in the gall-bladder of persons who never were incommoded, during their lifetime, with any symptoms that indicated the presence of such a complaint.

Purgatives have been much used in the jaundice, not only with the view of obviating costiveness, but also with that of exciting the action of the biliary ducts by increasing that of the intestines. Some physicians have, however, judged them useful only where there is a costive state of the bowels; while others, again, assure us, that drastic purges, whose action is both brisk and of long continuance, have proved highly serviceable.

Regular stools, with a soluble state of the bowels, are certainly necessary to a person afflicted with the jaundice; and in more than one or two instances I have known it to be completely removed by a diarrhoea supervening of its own accord.

Where the disease proceeds either from calculi or from spasmodic stricture, it seems rational therefore to presume, that, after having pursued the steps before recommended, we may make use of purgatives* with much advantage; and in these cases I have certainly

* R^y Pulv. Rhei, ʒj.
 Extraet. Taraxaci, ʒss.
 Hydrargyr. Chlorid. gr. xij.
 Syrup, q. s. M.
 Fiant pilul. xxiv. Capiat ij. vel iij. horâ
 decubitus.

* Take Powdered Rhubarb, one scruple.
 Extract of Dandelion, half a dr.
 Calomel, twelve grains.
 Syrup, a sufficiency.
 Divide the mass into twenty-four pills, and
 take two or three at bed-time.

experienced their beneficial effects very frequently; but where jaundice arises in consequence of some chronic affection of the liver or other adjacent viscera, active purgatives would be likely to do harm, by inducing much debility. In instances of this nature we may substitute aperients, such as any of the neutral salts dissolved in an infusion of senna.

With the intention of dislodging biliary concretions, gentle exercise, but more particularly that of riding on horseback, together with frictions, have been much advised, and certainly will be very proper, except during the paroxysms. Electrical shocks passed through the liver in the course of the common duct, may likewise prove a good auxiliary in promoting the passage of the calculus.

The warm bath and anodynes, by their relaxing and antispasmodic powers, have proved highly useful in the jaundice, when proceeding either from calculi or spasmodic stricture; and therefore, when either of these causes is suspected to have given rise to it, they should by no means be neglected.

When a biliary concretion remains stationary, in spite of all our endeavours to dislodge it and promote its being voided by stool, we may attempt its solution, however unsuccessful or inadequate the means may prove; for, until a gall-stone drops into the duodenum from some duct in the liver, the cystic duct, or the ductus communis choledochus, no solvent introduced into the stomach can come in contact with the stone, so as to produce the desired effect on it.

We are informed* that a mixture of æther and spirit of turpentine is a remedy which has been employed by many practitioners on the Continent, as a solvent of biliary concretions, with the most decided success; but more particularly by Mons. Durande, who affirms that of late he has cured all whom he met with suffering

Vel,
℞ Hydrargyr. Chlorid. gr. v.
Pulv. Jalapæ, ʒss.
Mel. Optim. q. s. M.
ft. bolus, pro re natâ capiendus.

Vel,
℞ Pilul. Aloes cum Myrrh. gr. xv.
Hydrargyr. Chlorid. gr. iv.
Syrup. Zingib. q. s. M.
Fiant pil. iv. pro dos.

Vel,
℞ Gum. Scammon. Pulv. gr. v.—x.
Potassæ Bitartrat.
Pulv. Zingib. āā gr. xij.
t. Pulvis pro dos.

Or,
Take Calomel, five grains.
Powder of Jalap, half a drachm.
Honey, a sufficiency to form a
bolus, which may be taken occasionally.

Or,
Take Aloetic Pills with Myrrh, fifteen
grains.
Calomel, four grains.
Syrup of Ginger, a sufficiency.
Divide the mass into four pills for a dose.

Or,
Take Scammony reduced to powder,
from five to ten grains.
Bitartrate of Potass,
Powdered Ginger, of each twelve
grains.
Mix them for a dose.

* See Soemmering de Concretionibus Bilis.

from gall-stones. The plan adopted by him is, after having continued the use of emollient and aperient remedies, to give his patients a mixture of three parts of sulphuric æther and two of spirit of turpentine, in the dose of two scruples or a drachm every morning; and upon this he directs them to take some emollient drink, such as milk-whey, veal-broth, &c. &c. We are told in the publication alluded to, that M. Durande has seen biliary concretions perfectly dissolved, and discharged by stool, in the form of a yellow matter, resembling peas, by this method. As the remedy, however, is apt sometimes to occasion nausea and other distressing symptoms, it should be administered with due caution, lest the pain should be increased by it; and before having recourse to its aid, the proper steps for obviating inflammation ought assiduously to be adopted.

Should we discover that jaundice has arisen in consequence of an inflammatory affection of the liver, we must, at an early period, have recourse to the usual means for carrying it off by resolution; viz. by venesection, topical bleedings, the exhibition of cooling, saline purgatives from time to time, and the application of a blister over the part, which ought to be renewed in a quick succession, if the disease does not soon abate—(see *Acute Hepatitis*); but where these means have either failed or been neglected, and it has proceeded on to a chronic state of enlargement and seirrhosity, pressing thereby on the biliary ducts, we must then resort to a use of mercury, both externally and internally, as advised under the head of chronic inflammation of that viscus.

In cases of this nature, as well as in those of jaundice arising from biliary concretions, it has been much the practice to employ neutral salts*, together with alkalies†, soap, and other deobstru-

* R_p Infus. Gentian. C. f. ʒjss.

Tinct. Cinchon. f. ʒij.

Potassæ Tartrat. gr. xv.

Pulv. Rhei. gr. v. M.

ft. Haustus, mane, horâ meridianâ, et vespere sumendus.

† R_p Sodæ Carbonat. ʒij.

Pulv. Cinchonæ, ʒj.

—— Rhei, ʒss.

Mucilag. Gum. Acaciæ, q. s. M.

ft. Electuarium, ejus sumat nucis moschatæ quantitatem ter in die.

Vel,

R_p Decoct. Cinchon. f. ʒx.

Tinct. Calumb. f. ʒij.

Sodæ Carbonat. gr. xij. M.

ft. Haustus, mane, iterumque horâ meridianâ, et vespere sumendus.

* Take Compound Infusion of Gentian one ounce and a half.

Tincture of Peruvian Bark, two drachms.

Tartrate of Potass, fifteen grs.

Powdered Rhubarb, five grains.

Mix them. This draught is to be taken morning, noon, and evening.

† Take Carbonate of Soda, two drs.

Powder of Peruvian Bark, one ounce.

—— Rhubarb, half a dr.

Mucilage of Gum Acacia, a sufficiency to form an electuary, of which let the bulk of a nutmeg be taken thrice a-day.

Or,

Take Decoction of Peruvian Bark, ten drachms.

Tincture of Calumba, two drs.

Carbonate of Soda, twelve grs.

Mix them, and let this draught be taken every morning, again at noon, and in the evening.

ents*. Soap has, indeed, been looked upon as a kind of specific in jaundice, and has therefore been employed in considerable quantities. Hemlock has also been used, but most probably without any good effect. Combining it either with cinchona bark or mercury† might possibly make it more efficacious. Taraxacum is another medicine much employed in jaundice, and very frequently with a good effect.

The symptoms which usually prove most distressing in this disease are, the pain in the epigastrium, sickness at the stomach, and costiveness. The two former of these will generally be relieved by bleeding, the warm bath, fomentations applied to the part, the exhibition of emollient clysters, and opiates, as before advised. Where they fail, the application of a large blister may possibly be attended with a better effect. Should the nausea and vomiting continue in spite of these means, we may then give the saline medicine in the act of effervescence, or something of a cordial antispasmodic nature‡, that may be likely to abate the irritation in the stomach. Large draughts of warm water containing carbonate of soda and a small quantity of laudanum are often highly useful.

* R₂ Gum Ammoniac.
Sapon. Dur. āā ʒj.
Ol. Junip. ℥v.
Syrup. Zingib. q. s. M.
Fiant pilulæ xxiv. quarum sumat iv. vel. v.
bis in die.

Vel,

R₂ Pulv. Rhei, ʒj.
— Cinnam. C. ʒss.

Saponis Dur. ʒij.
Ol. Junip. ℥v.
Syrup. Simpl. q. s. M.

ft. Massa, in pilulas l. dividenda, quarum
iij. vel. iv. sumat mane et nocte.

† R₂ Extract. Cinchon.
Extract. Conii, āā ʒij.

Syrup. Zingib. q. s. M.
Fiant pilul. lx. sumat. iij.—xij. in die.

Vel,

R₂ Pilul. Hydrargyri, ʒss.
Extract. Conii, ʒij. M.
Fiant pilul. l. quarum iij. sumat mane et
nocte.

‡ R₂ Confect. Aromat. ʒj.
Aq. Fontan. f. ʒvss.
Spirit. Pimentæ, f. ʒss.
— Ammon. Aromaticæ. f. ʒss.

Tinet. Opii, ℥xxv. M.
ft. Mistura, cujus capiat cochl. ij. vel iij.
urgenti nausæ.

* Take Gum Ammoniac,
Hard Soap, of each one drachm.
Oil of Juniper, eight drops.
Syrup of Ginger, a sufficiency to
form the mass, out of which make twenty-
four pills, and let four or five be taken
twice a day.

Or,

Take Powdered Rhubarb, one dr.
Compound Powder of Cinna-
mon, half a drachm.
Hard Soap, two drachms.
Oil of Juniper, eight drops.
Common Syrup, a sufficiency.

Divide the whole into fifty pills, of which
three or four are to be taken morning
and night.

† Take Extract of Peruvian Bark,
Extract of Hemlock, of each
two drachms.

Syrup of Ginger, a sufficiency.

Let sixty pills be formed out of the mass,
and from three to twelve be taken in the
course of the day.

Or,

Take Mercurial Pill, half a drachm.
Extract of Hemlock, two drs.

Mix them, and divide them into fifty pills,
of which three may be taken morning
and night.

‡ Take Aromatic Confection, one dr.
Pure Water, five oz. and a half.
Spirit of Pimenta, half an oz.
Aromatic Spirit of Ammonia, half
a drachm.

Tincture of Opium, forty drops.

Of this mixture let two or three table-
spoonfuls be taken when the nausea and
sickness are urgent.

Costiveness is to be removed by gentle laxatives, such as are here advised.*

When the disease is of a chronic nature, and attended with anasarca swellings, it will be proper to employ diuretics, as recommended under the head of Dropsy, strengthening the general system at the same time with astringent bitters, chalybeates, mineral waters, a nutritive, generous diet, and gentle daily exercise, but more particularly on horseback. Moderate quantities of both soda and Seltzer waters will be proper.

In the progress of the disorder, it sometimes happens that a spontaneous diarrhœa arises, and prevents the future absorption of the bile into the mass of fluids. As long as it continues moderate, and induces no debility, it may be allowed to go on; but where it attacks with violence, or takes place in a constitution much injured and enfeebled, it should be checked by having recourse to the means advised under that particular head.

When a putrid disposition shows itself, this must be counteracted by proper antiseptics.—(See *Scurvy*.) In jaundice arising from a scirrhus of the liver, we must adopt the steps recommended in chronic hepatitis.

A variety of other different remedies have been mentioned as possessing a good effect in jaundice, but many of them have been found on trial to be perfectly inert. Among the rest, raw eggs have been proposed as a solvent.

Dr. Darwin mentions the case of a gentleman between forty and fifty years of age, who had laboured under the jaundice about six weeks without pain, sickness, or fever, and had taken emetics, cathartics, mercurials, bitters, chalybeates, æther, &c., without any apparent advantage. On a supposition that the obstruction of the bile might be owing to a paralysis or torpid action of the common

* R_o Ol. Ricina, f. ʒij.
Mucil. Gum. Acaciæ, f. ʒj.

Misceantur simul in mortario, et adde
Aq. Anethi, f. ʒj.
Tinct. Jalapæ, f. ʒiij. M.
Capiat dimidium pro re natâ.

Vel,

R_o Pulv. Jalapæ, ʒj.
Potassæ Bitart. ʒij.
ft. Pulvis pro dos.

Vel,

R_o Aloes Socotr. ʒjss.

Sapon. Venet. ʒj.
Potassæ Carbonat. ʒss.

Syrup. Rhamni, q. s. M.
Fiant pilul. xxxvj. capiat iij. vel iv. horâ
decubitûs.

* Take Castor Oil, two ounces.
Mucilage of Gum Acacia, one
ounce.

Mix them in a mortar, and add
Dill Water, one ounce.
Tincture of Jalap, three drs.
Take the half for a dose, as the occasion
may require.

Or,

Take Powder of Jalap, one scruple.
Bitartrate of Potass, two scruples.
Mix them for a dose.

Or,

Take Socotrine Aloes, one drachm and
a half.
Hard Soap, one drachm.
Carbonate of Potass, half a
drachm.

Syrup of Buckthorn, a sufficiency.
Let thirty-six pills be formed out of the mass,
and three or four be taken at bed-time.

bile-duct, and the stimulants taken into the stomach seeming to have no effect, he directed half a score of smart electric shocks, from a coated bottle which held about a quart, to be passed through the liver and along the course of the common gall-duct, as near as could be guessed, and on that very day the stools became yellow; the electric shocks being continued a few days more, the patient's skin became gradually clear. In cases where we have reason to suspect the obstruction of the bile to be owing to a torpid action of the bile-duct, and where other means have failed in promoting the desired intention, we should therefore make trial of electricity.

Jaundice which arises from simple obstruction of the gall-ducts, is often removed by the internal as well as external use of Bath waters. The complicated diseases which are brought on by a long residence in hot climates, affecting the secretion of bile, the functions of the stomach and alimentary canal, and which generally produce organic derangement in some part of the hepatic system, likewise receive much benefit from the Bath water, if used at a time when suppurative inflammation is not actually present. Whenever there is an increased heat of the skin and quickness of the pulse during the paroxysms excited by biliary concretions, these waters should not be taken until the acute symptoms subside.

Cheltenham water is another remedy which has been found of essential service in obstructions of the liver and the other organs connected with the functions of the alimentary canal. Persons who have had their biliary organs injured by a long residence in warm climates, and who are suffering under the symptoms either of excess or deficiency of bile, and an irregularity in its secretion, receive remarkable benefit from a course of this water judiciously exhibited. Its use may be here continued even during a considerable degree of debility; and from the great determination to the bowels, it may be employed with advantage to check the incipient symptoms of dropsy and general anasarca, which so often proceed from an obstruction in the liver. In full, sanguine habits, the water of the saline spring only should be drunk. Dr. Saunders recommends drinking it warm.* Cheltenham water, besides containing salts of a purgative nature, is likewise a chalybeate. The iron is suspended entirely by carbonic acid, of which gas the water contains about an eighth of its bulk.

Where the functions of the liver are much deranged, drinking the Leamington waters is often attended with much advantage; but in pure cases of gall-stones, unmixed with any fulness or hardness of the liver, neither this water, nor that of Cheltenham, will be of much service.

A diet consisting chiefly of vegetables appears to be best calculated for persons labouring under jaundice, or in whom bilious concretions are apt to form.

* See his Treatise on Mineral Waters.

Together with a use either of the Bath or Cheltenham waters, great advantage may be derived from regular and sufficient exercise daily, particularly on horseback, as nothing will tend more to prevent the bile from stagnating and becoming inspissated, which it is apt to do in those persons who lead a studious or sedentary life.

CLASS IV.

LOCALES, OR LOCAL DISEASES.

AFFECTION of a part, not of the whole body, generally characterizes this Class.

ORDER I.

THE DYSÆSTHESIÆ.

DEPRIVATION or loss of some sense, from the fault of the external organ.

NYCTALŌPIA, OR NIGHT BLINDNESS.

IN this disease the sight is perfectly clear and distinct in the day-time, but a total blindness takes place by night, from which occurrence it derives its name.

The disorder is peculiar to the inhabitants of tropical climates and the southern parts of Europe, being rarely, if ever met with in cold countries; and has been supposed to proceed from torpor of the retina and optic nerves, which suffer so much from the strong reflected rays of the sun by day, as not to be susceptible of the faint or weak light which the night furnishes. It is a frequent concomitant to scurvy between the tropics. In some cases, it is symptomatic of derangement in the chylopoetic organs, but more particularly in the hepatic system.

It becomes apparent towards evening with a dimness of sight, which gradually increases as the night approaches; and the darker it gets, so much the more indistinct does vision become. It is in general unattended by any other symptom, except that, perhaps, a more than ordinary sense of fulness is now and then perceived in the forepart of the head and over the eyes.

Nyctalopia seldom proves a disease of much importance, or of

long duration; but, on the contrary, generally admits of an easy cure.

Evacuation, both by bleeding and purging, has been recommended by such writers as have taken notice of this disorder; but, as it is supposed to depend upon a relaxed state of the optic nerves, or paralysed condition of the retina, these remedies appear to be improper, and those we employ ought to be such as will strengthen the tone of the parts. With this view, the eyes should be washed several times a-day, by means of an eye-cup, with cold water, or some gentle astringent collyrium*; the patient at the same time wearing a green silk blind over his eyes, and avoiding all exposures to the sun or any great glare of light.

Blisters applied to the temples, tolerably close to the external canthus of the eye, and repeated several times, will expedite the cure, unless depending on scurvy, in which case they will have little effect until that complaint be removed.

If the internal use of any medicine is necessary in nyctalopia not dependent on scurvy, or on any derangement of the chylopoetic organs, but merely on a peculiar state of the optic nerves or retina, it is probable that the cinchona bark, joined with valerian and chalybeates, might be the most proper.

AMAUROSIS.

AMAUROSIS, Gutta Serena, Dysopia, Ambliopia, Mydriasis.

By this title we understand a partial or complete loss of sight, dependent on some change in either the special nerve of vision, or of the nervous system generally.

It is, for the most part, unattended by any external appearances of disease, the eye retains its brilliancy, transparency, &c., and, but for the peculiar staring aspect which usually attends this affection, it might escape the attention of ordinary observers. The iris, on close inspection, will generally be found to be but little affected by the influence of light, the pupil being usually dilated, and often irregular, oval, or pear-shaped. Little or no difference in sight is observed by the patient in a strong or subdued light.

Amaurosis may arise during any period of life. It is not unfrequently congenital, and has often been observed to have an hereditary tendency.

This obscure disease may depend on inflammatory or other change of the retina itself, or of the vascular structures in close proximity with it, or of the optic nerve, in any part of its course, or of the brain. It may be also the result of undue pressure, consequent on disturbed equilibrium of the circulation, of poisons

* R. Zinc. Sulphat. gr. viij.—xv.

Aq. Rosæ, f. ℥iv. M.

* Take Sulphate of Zinc, from eight to fifteen grains.

Rose Water, four ounces.

Mix them.

which appear to possess a special influence on the nervous system, or of distant irritation of the extreme nerves excited by the presence of worms, &c. In some instances its origin has been traced to a negligent habit of using but one eye, and occasionally it has appeared to be associated with hysteria. Tumours developed in the orbit or skull, or the pressure of an aneurism, cysts, or induration and thickening of the periosteum, have given origin to this disorder.

Violent blows on the head or eyeball, apoplexy, lightning, exposure to the rays of the sun, or of other intense light, sudden or long-continued, frequent employment of the eye or eyes in any delicate pursuits, irregularity in the digestive organs, severe exercise and strong passions, especially terror and anger, drunkenness, immoderate venery, special poisons, prolonged luetation, leucorrhœa, hæmorrhage, and all other causes which give rise to debility and nervous diseases generally, may produce amaurosis. Though occasionally complicated with evident signs of inflammatory action, it is much more commonly associated with debility; and in practice, it will generally be necessary rather to augment the powers of life by tonics and the use of stimulants and generous diet, than by the opposite treatment to diminish the patient's strength.

Should there be general plethora, with pain in the eye, flashes of light, and the appearance of flies or "blacks" floating before the eyes, the cautious abstraction of blood by venesection at the elbow, or by cupping on the temples or behind the ears, or by leeches applied to those parts, may be necessary. Purgatives should be administered, the diet reduced, rest of the eyes enjoined, and the gradual exhibition of small doses of mercury so as to affect the mouth. This treatment must be continued according to the circumstances of the case, and blisters may subsequently be applied to the nape, temples, or behind the ears.

On the contrary, in those cases evidently associated with debility, every means of improving the patient's health must be adopted. He may be allowed a good diet, consisting of easily digestible food, with the use of such stimulants as are known best to agree with him. He should take exercise daily in the open air, and if a citizen, removal into the country would be most desirable.

The tonics to be used must be regulated by the peculiarity of the debility. In those cases in which it is dependent on febrile or inflammatory disease, the preparations of bark will be of most service. And those arising from exhausting discharges will be benefited by iron, zinc, copper, &c.

In the treatment of a large proportion of the cases of amaurosis we find no prominent indications, nor any assignable cause of the disease. A careful inquiry into the cases may elicit no other appreciable departure from health. Under these circumstances, a very careful course of alterative treatment must be prescribed. Small doses of mercury and chalk may be given once or twice a day, during a considerable period; or of the bichloride of mercury

($\frac{1}{20}$ to $\frac{1}{8}$ gr.); or of iodide of potassium (gr. i. to v.); or strychnia may be applied locally to the brow, after having produced vesication with the ordinary blistering plaster, commencing with the sixth part of a grain, and repeating the application once in twenty-four hours.

Electricity is said to have afforded relief in some instances, but its use must be guided with very great caution.

For those cases dependent on dis-use of the eye, the remedy is obviously the gradual assumption of the necessary stimulus of employment.

PARACUSIS, OR DEAFNESS.

DEAFNESS is the result of many and varied causes, each of which has received a special name, and been treated in systematic works on Acoustic Medicine, as a specific disease having its appropriate title, history, and treatment. The majority of them are essentially inflammatory, but some are nervous, and a few congenital and dependent on malformation of the organ. They are generally within the remedial power of art, if treated before considerable organic change has taken place; and though obscure from their secluded position and complex nature, yet in the hands of the experienced, their recognition and appropriate treatment are reduced by the improvements of modern science to considerable accuracy and precision.

They may be classified as follows: —

Classification of Diseases of the Ear.

- | | | |
|--|---|---|
| 1. Diseases of the EX-
TERNAL EAR. | { | Those of the auricle.
Those of the meatus or canal.
Those of the membrana tympani or
membrane of the drum. |
| 2. Of the MIDDLE EAR, or cavity of tympanum and Eustachian tube. | | |
| 3. Of the INTERNAL EAR. | | |
| 4. MALFORMATIONS. | | |

Diseases of the ear are much more frequent than is generally supposed, in many instances being hereditary.

Amongst their most common exciting causes may be mentioned cold, loud noises, as of the firing of cannon, that of tilt hammers; the introduction of foreign bodies into the meatus or tympanum, or the extension of inflammation by cutaneous diseases to the meatus and membrane of the drum; or along the Eustachian tube from the pharynx; serofula, syphilis, mental emotions, neuralgia, distant nervous irritation, and lastly, fevers.

The diseases of the auricle consist of common, phlegmonous, or erysipelatous inflammation attended by more or less swelling, and are to be treated on the same plan as for those affections in other parts; viz. by the application of warm fomentations, poultices,

and attention to the principal secretions, and, in the event of the formation of pus, its early and free evacuation.

DISEASES OF THE MEATUS.

Inflammation of an acute kind frequently attacks the lining membrane of this canal, and is attended with more or less pricking or burning pain in the ear and head, tinnitus, and the secretion of tenacious or irritating wax. The ear should be carefully examined, the auricle being drawn upwards and backwards, so as to admit a full light into the canal; the condition of the membrane may then be observed, and the presence or absence of a foreign body, or of an accumulation of cerumen, be detected. Should the pain be great, the ear may be fomented with decoction of poppy-heads, and the canal gently syringed with warm water to remove acrid secretion. Afterwards, a lotion of goulard-water may be dropped into the ear occasionally: this will usually suffice for mild cases. In the more severe, accompanied by swelling and redness of the organ, with great pain in the head and abundant secretion of an acrid nature, the same remedies may be adopted, with the addition of leeches behind the ear, and saline and aperient medicines should be given internally, with opium at night to procure sleep.

The attempt, under these circumstances, to remove foreign bodies, by means of small forceps or the syringe, is usually attended with so much pain, that the patient cannot be held still. The exhibition of chloroform will then be found of great service, and the operation can be conducted with far better prospect of success.

Fungous granulations, which fill up the auditory passage, are sometimes the result of a previous purulent discharge either neglected or improperly treated; and these occasionally throw out a considerable quantity of blood. It will be most advisable not to endeavour to extract these substances by the forceps, as sometimes practised; but to corrode them away by sprinkling them with some mild escharotic, such as the alumen exsiccatum.

Inflammation of the Membrana Tympani may lead to thickening and induration of its substance, or perforation and consequent communication between the outer and middle ear. For the former condition, it has been advised to perforate the membrane—a proceeding concerning which there is still much room for precise information, for it has proved useless in a large proportion of the cases in which it has been performed. Kramer considers “it ought not to be had recourse to, excepting when both ears are affected in the same way, and suffer simultaneously from a high degree of difficulty of hearing; or, when the second ear, the membrane of which is not diseased, yet suffers from difficulty of hearing so incurable, that perforation of the membrana tympani affords the only prospect of probable improvement.” On the other hand, per-

foration of the membrane, as the effect of inflammation, gives rise to more or less deafness, and till within a late period has been considered incurable.

Mr. Yearsley published some years ago "a new mode of treating deafness, when attended by partial or entire loss of the membrana tympani." This consists in the careful insertion of a "small pellet of moistened cotton-wool, so as to come in contact with a small portion of the membrane which still remains. This requires some care in its introduction, but may soon be learned by the patient; and in the cases placed on record seems to have been attended with the happiest effects. Mr. Wakley, jun., has placed on record many successful cases of induration with epithelial hypertrophy, &c. treated by the introduction of glycerine into the meatus. By its continual influence, the membrane has been restored to its normal condition, large masses of epithelium have become detached, and thus deafness of many years' duration cured.

DISEASES OF THE MIDDLE EAR AND EUSTACHIAN TUBE.

These parts of the organ are frequently the subject of inflammation, leading to accumulation of mucous or other fluids, or to obstruction or closure of the canal. These cases require great care and discrimination in diagnosis and treatment, and an accurate knowledge of the anatomy of the organ, for on mechanical means principally their cure depends. The acute diseases are to be treated on the same principles as those of the external ear; but after all endeavours have been made by means of general remedies, which act through the system at large, to restore the function of the ear, a large proportion will still remain unimproved. For these, science has now found remedies.

The fluid, whose presence in the tympanum obstructs its restoration, may be removed by passing a small catheter, adapted to the size and form of the Eustachian tube, through the nose, some distance up this canal, and then, by injections of water or air, the fluid can be dislodged. This may be repeated at intervals if necessary, with every prospect of ultimate success.

Stricture, or obliteration of the canal, can only be relieved by means of the catheter and a small catgut bougie. The E string of a harp is recommended by Kramer. The catheter is to be first passed into the mouth of the canal, and through it the bougie is then carefully pushed. In this manner many slight obstructions may be cured; but in complete obliteration of the tube, no means have yet been successful in restoring the passage.

DISEASES OF THE INTERNAL EAR.

Nervous deafness is considered by Kramer under two heads,—the Erethitic, and the Torpid. The hearing, without any appreciable cause, gradually diminishes, so that after several months, or perhaps years, the patient finds himself incapacitated for the usual

intereourse of life. Noises similar to the roaring of the sea, the descent of rain, or the chirping of birds, take place in one or both ears, and are accompanied by tickling or other troublesome sensations. The usual secretion of wax gradually fails, and the canal becomes dry and scurfy. In the torpid form, there is throughout no noise of any kind; in every other respect the symptoms are similar. "The diagnosis of nervous deafness depends solely on the most accurate local investigation of the ear. The auditory canal is free, and, in most cases, devoid of any ceruminous secretion; when, in particular cases, there is any accumulation within it, the complaints are as little increased by the presence, as they are benefited by the removal of such accumulation. The cavity of the tympanum, together with the Eustachian tube, are equally free from any accumulations of matter; that is to say, the air blown in, and almost if simply breathed in, passes distinctly, and without any effort, to the middle of the Eustachian tube, and even up to the membrana tympani. After this examination, the patient remarks (and this is a positive sign of nervous deafness) that the deafness and tinnitus are decidedly increased, are rendered worse, though only for some hours, or even merely for a quarter of an hour; the head becomes confused, and the ear seems as if it were stuffed."

In the treatment of these diseases Kramer recommends, after due attention to the state of the general health, the introduction, through the Eustachian tube, of the vapour of acetous æther into the middle ear, by means of an apparatus constructed for the purpose; this is to be continued daily for a quarter of an hour. He gives the particulars of many interesting cases successfully treated in this manner.

When the disease is the effect of fever, it usually goes off as the patient regains his strength.*

ORDER II.

DYSOREXIÆ.

FALSE or defective appetite.

BULIMIA, OR CANINE APPETITE.

THIS disease is the direct opposite of anorexia, as the patient is affected with an insatiable and almost perpetual desire of eating, in which if he is not indulged, he is apt to fall into fainting fits.

* Vide Kramer, "On the Nature and Treatment of Diseases of the Ear," translated from the German by Dr. J. R. Bennett.

With its real causes we seem not to be very well acquainted. In some cases it has been supposed to proceed from a morbid acid in the stomach; and in others, from too great a sensibility or peculiar affection of its nervous coat. In most instances it ought, in my opinion, to be considered as depending more frequently on monstrosity than disease. Some of the cases are clearly referable to insanity.

The remote causes of bulimia have been considered by some physicians as chiefly hereditary, the habit of eating largely and voraciously, and without due mastication, obstruction of the mesenteric glands, liver, &c.; the disappearance of chronic eruptions, the suddenly arresting habitual discharges, or the healing of old ulcers. It has, in some instances, been attributed to an irregular distribution of the vital energy, and its concentration in the stomach.

A slight form of bulimia is not unfrequently met with in pregnant women, and there is usually a painful longing after particular articles of food, of which an enormous quantity is devoured.

The morbid appearances on dissection consist chiefly of inordinate distensions of the stomach and duodenum, a vascular and corrugated state of their mucous surface; a flabby, softened, and sometimes thickened appearance of all their tunics; displacement of the greater part of the stomach low in the abdomen; tænia in the bowels, lumbrici in the duodenum and stomach; enlargement, and other lesions of the liver; scirrhus, thickening of the coats of the duodenum; and various organic changes in the mesentery and its glands, pancreas, spleen, and very generally in the mucous surface of the small and large intestines.

In the 3rd volume of the Medical and Physical Journal* is reported an extraordinary and well-attested case of bulimia in a French prisoner, who, in one day, consumed of

Raw cow's udder 4 lbs.

Raw beef - - 10

Candles - - 2

Total - - 16 lbs.

Besides five bottles of porter.

It appears from Dr. Cochrane's report of this case, as inspector and surgeon of the prison in Liverpool, where this cannibal was confined, that the fæces were by no means in proportion to the ingesta, and indeed seldom exceeded those of other men; and that with the ordinary allowance of drink, the quantity of urine was not more than a quart a-day; neither was it more offensive than that of other men, but there was a constant propensity to exhalation from the surface of his body; and soon after his getting into bed, he was usually attacked with such a profuse sweating as to oblige him to throw off his shirt. In this case, it is therefore

* See page 209.

evident, that the recrementitious parts of the aliment were evacuated principally by the skin; and the same may probably happen in most cases of bulimia.

Another singular case of voracious appetite has been reported to the National Institute by M. Percy, a surgeon in chief to the French army. A young man from the neighbourhood of Lyons, named Tarare, and who early in life belonged to a troop of strolling jugglers, accustomed himself to swallow flints, enormous quantities of broken victuals, basketfuls of fruits, and even living animals. The most alarming symptoms endured in consequence were not sufficient to overcome this dangerous habit, which became at last an imperious necessity.

Enrolled at the commencement of the late war in one of the battalions of the army of the Rhine, he sought for the necessary supply of food around the movable hospital. The refuse of the kitchen, the remains of the messes, the rejected matters, or corrupted meats, did not suffice him. He often disputed with the vilest animals their filthy and disgusting meal: he was perpetually in search of cats, dogs, and even serpents, which he devoured alive. He was obliged to be driven by force or threats of punishment from the dead room and the places where the blood drawn from the sick was deposited. It was in vain attempted to cure his ravenous appetite by giving him fat, acids, opium, and even pounded shells. The disappearance of a child of sixteen months old gave rise to horrible suspicions of him, and he fled. Five or six years afterwards, he was admitted into the infirmary of Versailles in a consumptive state, which succeeded to his enormous appetite. He soon after died.

M. Tessier, chief surgeon of the Infirmary, examined the body, notwithstanding that an abominable odour exhaled from it. The stomach was of an extraordinary capacity, the intestines were ulcerated and remarkably distended, and the gall-bladder was of a very large size.

Tarare was small in stature, flabby, and weak; his countenance had nothing ferocious in it. When he had fasted for a time, the skin of his belly could be almost wrapped round him; and when full, he appeared as if dropsical. A thick vapour issued in torrents from his mouth; all his body smoked; the sweat flowed abundantly from his head; and, like all other ferocious animals, he slept during the time of digestion.

A case of fever, attended with inordinate appetite is recorded in the 5th volume of the Medical Transactions of the London College of Physicians. The patient was a young gentleman, sixteen years of age, who, with all the other symptoms of fever, attended at first with a powerful determination to the head, showed the usual want of appetite and dislike to food (owing to the deprivation of the powers of digestion attendant on almost all pyrexial diseases) until the fifth day, when the most insatiable craving for food came on, and continued during the whole period of the disease, which was

extended to upwards of thirty days, with all the ordinary characteristics of typhus. The desire for food came on regularly with the paroxysm of fever, and continued unabated until that subsided, when he usually fell into a profound sleep. A remarkable circumstance in this case was, that the digestive powers of the stomach were equal to the supply of food, and by the aid of active purgatives, six or seven copious stools were daily procured, equal in bulk and consistence to those of a strong, healthy adult.

When a ravenous appetite is occasioned by an acidity in the stomach, this ought to be corrected by an emetic, with the after-use of alkalies.

Where the power of the stomach in quickly dissolving, assimilating, and disposing of the aliment, is so great as in the cases just mentioned, we probably may be able to allay its contractile force by oil, fat meats, opiates, and a free use of tobacco, which may both be chewed and smoked. The liquor potassæ administered in doses of about five-and-twenty or thirty drops in a little veal broth, and repeated twice or thrice a-day, might probably have a good effect.

Small doses of the pilula hydrargyri combined with ipecacuanha, active cathartics, and external irritants over the stomach, such as the unguent. antimon. tart., may possibly have a good effect.

A medical friend has communicated a case of bulimia to me, which was cured by confining the patient to a diet consisting wholly of eggs boiled to a very hard consistence; and these he carried constantly about with him, in order to satisfy his appetite whenever it became craving.

FUROR UTERINUS, OR NYMPHOMANIA.

WHEN this disease exists, as described by some authors, in a violent form, and is accompanied with libidinous gestures and speeches, it must be considered and treated as a species of insanity.

In a minor degree, it is not unfrequently met with, especially in hysterical women. It is usually associated with a morbid state of the uterus or vagina, and is generally attended with leucorrhœa or prurigo pudendi.

But a frequent and often unsuspected cause (especially in young unmarried females) is masturbation. Indulgence in this vice often commences at the age of twelve or thirteen, and is continued for years afterwards, and as the evil consequences do not always follow rapidly, the patient herself is frequently unconscious of the real source of her ailments.

It is difficult to extract from females a confession; but this habit may be suspected when we notice great pallor of countenance, dilated pupils, with a livid circle round the eyes (much deeper in colour than that occasioned by the mere presence of the catamenia),

a great tendency to hysterical faintings and palpitations, a retiring manner and a peculiar reserve in answering the common questions relating to health.

If in addition we find sores round the nails and warts on the index and second finger, our suspicions will be strengthened. The warts are generally very rough and broad, and quite intractable to the usual treatment by caustics, &c.

When the unnatural excitement arises solely from leucorrhœal discharge, we must employ sedative injections and warm hip-baths, or astringent lotions of alum, lead, or zine, accordingly as the parts are free or not from inflammation. When produced by prurigo, the most effectual application is a solution of the nitrate of silver, containing from five to eight grains in an ounce of distilled water.

When the disease is caused by confirmed masturbation, no relief can be obtained without a total abandonment of the acquired habit, and to ensure this, the constant superintendence of a friend is necessary. In addition, and when the patient is much reduced, a steady perseverance in preparations of steel, hip-baths, cold sponging, and constant employment both of mind and body, will essentially conduce to a permanent cure.

ANOREXIA, OR LOSS OF APPETITE.

A WANT of appetite and loathing of food is not usually an original affection, but prevails as a symptom of some other disease, such as dyspepsia, and is therefore to be obviated by aromatics, bitters, cinchona joined with sulphuric acid, chalybeates, a course of the Bath waters, &c., as advised under that head. Anorexy sometimes proceeds from ulceration of the stomach (occasionally partaking of a cancerous nature), stricture of the cardiac orifice, or scirrhus of the pylorus, in which cases every plan of treatment will fail, and death sooner or later ensue as the consequence.

In spontaneous anorexy, where the stomach is loaded with bile or crudities, an emetic in the evening, with some kind of stomachic purgative the next morning, will seldom fail to effect a cure.

ANAPHRODISIA, OR IMPOTENCY.¹

IN some cases this disease is owing to an original defect in the organs of generation; but it more usually arises either from topical weakness, brought on by excess in venery or onanism, or from great debility in the system, produced by severe evacuations, preceding diseases, such as an unsuccessful management of gonorrhœa, neglected gleet, an affection of the spinal cord, inflammation of the prostate gland, diabetes, &c., or by a want of nutritive food. In a few instances, it may be occasioned probably by a want of sufficient confidence, or a degree of fear at the time of coition.

Where the disease proceeds from an original defect in the organs of generation, it will not be possible to effect a cure. When it depends upon some disease of the parts, this must be removed by the means which have been pointed out as most proper under each head.

If it arises in consequence of general weakness, the system is to be strengthened by a generous, nutritive diet; by cold bathing, both general and topical; by the cinchona bark, sulphate of quinine, myrrh, chalybeates, and other tonics, as advised under the head of Dyspepsia. Stimulants, such as the tinctura cantharidis*, might likewise be of service if given in small doses, repeated twice or thrice a-day.

Should the patient, at any time during the use of this medicine, feel a pain or uneasiness in passing his water, the remedy must be discontinued until the distress abates; after which it may be again prescribed to the proper extent, and be continued for a considerable time.

For further details see the article *Spermatorrhœa*.

ORDER III.

DYSCINESIÆ.

OBSTRUCTED or depraved motions, from fault in the organs.

STRABISMUS, OR SQUINTING.

SQUINTING is generally owing to one eye being less perfect than the other, on which account the person endeavours to hide the defective eye in the shadow of the nose, that his vision by the other may not be confused. Sometimes the habit is acquired, and cannot afterwards be easily corrected.

Where squinting has not been confirmed by long habit, and one eye is not much worse than the other, we are told¹ the defect may often be obviated by making a child wear, for some hours every day, a piece of gauze stretched on a circle of whalebone over the best eye, in such a manner as to reduce the distinctness of the vision of this eye to a similar degree of imperfection with the

* R. Decoct. Cinchon. f. ℥j.

Tinct. Cinnam. C. f. ℥ij.

— Cantharidis, m xij—xx. M.

ft. Haustus, bis in die sumendus.

* Take Decoction of Peruvian Bark, one ounce.

Compound Tincture of Cinnamon, two drachms.

Tincture of Spanish Fly, from twenty to thirty drops.

Mix them. This draught is to be taken twice a-day.

¹ See Darwin's Zoonomia, vol. iii. class 1, 2, 4, 5.

other; or the better eye may be totally darkened by a tin cup covered with black silk for some hours daily, by which means it will be gradually weakened by the want of use, and the defective eye will be progressively strengthened by using it.

In most cases of strabismus we shall be enabled to afford essential relief by the simple process of binding up the sound eye every day for two or three hours, so as to oblige the patient to make use of the debilitated organ, and according as it is more or less indisposed, to keep the other more or less veiled, continuing the process until the diseased eye can fully and properly perform its functions.

Many cases of squinting depend on some cause of irritation of the nervous system, such as worms in the intestines, gastric excitement consequent on error in diet, and very frequently from painful and protracted dentition. In others, it is symptomatic of disease of the brain, as hydrocephalus.

The former may be relieved by the administration of laxatives to remove worms, &c., and by scarification of the gums in those arising from teething. The latter are obviously only within the reach of such remedies as will remove the important disease coincident with it. When once established, this defect is but seldom cured, except by an operation, which consists in dividing that muscle or its tendon, by which the eye is drawn from its proper position. This operation may easily and safely be performed, and, in the hands of experienced operators, generally succeeds.

ORDER IV.

APOCENOSES.

UNUSUAL flux of blood or other humours, without pyrexia, or increased impetus of the fluids.

EPHIDROSIS, OR IMMODERATE SWEATING.

THIS is usually a symptomatic affection, but it nevertheless sometimes prevails as an idiopathic disease, and then is commonly owing to general weakness and debility, accompanied with a preternatural determination to the surface of the body. It is generally to be met with in the last stage of pulmonary consumption.

The cure is to be effected by covering the body lightly with apparel and bed-clothes; by keeping the chamber of a moderate temperature; by determining from the surface of the body, by means of diuretics and gentle laxatives; and, lastly, by strength-

ening the system by chalybeates and other tonic medicines, cold bathing, and the means advised under the head of *Dyspepsia*, avoiding at the same time too long an indulgence in bed, and a use of warm slops.

In the colliquative sweating which attends hectic fever and *phthisis pulmonalis*, the diluted sulphuric acid is much employed.

ENEURESIS, OR INCONTINENCE OF URINE.

INCONTINENCE of urine is defined by Sir B. Brodie to be "an involuntary escape of urine from the bladder; a state of things entirely different from the constant discharges of urine which take place in cases of irritable bladder, where each discharge is the result of a distinct act of volition, excited by pain, or in some other way." This definition would exclude a very considerable proportion of the cases of involuntary discharge of the urine, which cannot be well classed under any other head, and which differ only, in an uncertain degree, from the above conditions; under these circumstances, we shall treat of the disease in its fullest acceptance, including in this section incontinence from all known causes.

In the first place, incontinence has been attributed to relaxation of the sphincter of the bladder, dependent on various debilitating causes, such as a too free use of spirituous liquors, masturbation, and venereal excesses; to an irritable state of the organ, arising from acridity of the urine, the presence of a foreign body, enlargement of the prostate gland, or a tumour pressing on its structures; or inflammation of the bladder, its neck, or surrounding parts, may give rise to this disease. A far larger proportion of these cases depends on distention of the bladder, consequent on stricture, or some other obstacle to its free evacuation; under these circumstances, the urine accumulates till the resistance of the sphincter is overcome, and then a constant or occasional dribbling takes place as secretion goes on.

Mechanical injuries which destroy the integrity of the organ, or produce an incomplete occlusion of the canal, are commonly the origin of the most incurable incontinence. Thus it frequently takes place from artificial dilatation of the urethra, for the purpose of extracting or crushing calculi (especially in the female); also after the operation of lithotomy; from fistula in perinæo; or injury to the bladder occurring during parturition, by which laceration or sloughing may implicate these parts. It may also be consequent on paralysis, from injury, or disease of the spinal cord; the irritation produced by an over dose of cantharides; hysteria; and lastly, children, during sleep, are often in the habit of having involuntary evacuation of the bladder, probably in consequence of an over-irritable mucous membrane. It is obvious that no general rules of treatment can be given which do not re-

cognise the special peculiarities of each case. In those which are attended with debility and relaxation, tonics, including change of air, cold bathing, a good diet, and the administration of the preparations of iron, quinine, &c., internally. Small doses of tincture of cantharides, or the application of a blister to the loins or sacrum, have been also recommended, and, of course, the exciting cause must be avoided. When attendant on irritable bladder, we have seen great benefit from the exhibition of the decoction of *uva ursi*, in doses of \mathfrak{z} j. to \mathfrak{z} ij. three times daily. If the urine is over acid, bicarbonate of potash, gr. xv. to \mathfrak{z} j. may be added, and the patient may use the warm bath occasionally with advantage. An acid diet should be proscribed. Those dependent on calculus, can only be remedied by its removal; if that is impracticable, some relief may, perhaps, be obtained by the free use of opium or hyoscyamus. When the bladder is distended, the catheter must be introduced two or three times a day, and the obstruction, if possible, removed.

When dependent on destruction of part of the walls of the bladder, fistula, or dilatation of the canal, surgery affords the only means of restoring the organ.

“In children the disorder usually gets well of itself as they grow up and acquire strength. When they wet their beds really from idleness and carelessness (which, I believe, is rarely the case), moderate chastisement may be proper, inasmuch as the fear of correction will make them pay more attention to the earliest calls of nature. It has always been my own conviction, that this doctrine is carried to an unjustifiable extent, particularly in schools, and been a pretext for the most absurd kind of severity. Nor is it doubted by any man who understands the subject, that, in almost all the cases, the disorder is a true infirmity, the supposed crime taking place, in fact, when the child is asleep and unconscious of what is happening.”

SPERMATORRHŒA, INVOLUNTARY DISCHARGE OF SEMEN.

INVOLUNTARY emission of semen occurs under a variety of circumstances, and only claims our attention when from its frequency it seriously impairs the health or virile power of the individual.

It may occur during sleep in a healthy subject, and probably is then only a means of removing an over-distended condition of the seccerning tubes of the testicle, produced by venereal, or other excitement. These cases have been compared to the congestions of the head, &c., so often relieved by slight irruptions of blood from the nose, &c. On the other hand, the discharge may become excessive, or, from the condition of the parts, it may outlive the state that excited it; then, like repeated nasal hæmorrhages, it gives rise to inconveniences proportioned to its frequency, its quantity, and the constitution of the individual. Involuntary

seminal emissions may be caused by too great excitement of the genital apparatus, following venereal excesses or masturbation. A state of irritation remains in the spermatic organs after such excitement, which induces an increased secretion and hurried discharge of the secreted fluid, without complete erection, and almost without sensation. Lastly, the relaxation of the ejaculatory canals accompanying this state of irritation may allow the expulsion of the semen without either erection or enjoyment, and this takes place especially during defæcation and the expulsion of the urine.

This constant loss of seminal fluid is most prejudicial to the health of the patient; "he becomes," says Mr. Curling, "thin, pale, and feeble, has impaired vision, and a sickly, languid look, suffers pains in the head and back, is hypochondriacal and apathetic, and totally unfitted for active bodily or mental occupation. He often experiences uneasy sensations in the testicles, which are soft, and hang low. The scrotum is pendulous and lax, and the spermatic veins are commonly large and varicose. His symptoms are aggravated after each emission, which is usually followed by a painful sense of fatigue and malaise, that last many hours."

Many of the examples recorded by Lallemand were complicated with nervous diseases, and had been mistaken for organic affections of the brain and its membranes, dependent on inflammation. And in others the patients actually died from diseases of those parts, consequent on the depressing effects of spermatorrhœa. Many other of these patients were supposed to suffer from chronic gastritis, or gastro-enteritis, from aneurisms near the heart, the early symptoms of phthisis, &c.

The emissions at first consist of the semen and the secretions of the vesiculæ, &c., of their natural consistence; but these soon become more liquid, and scarcely contain any seminal animalcules: they may become replaced by mere muco-purulent fluid. On finding their way into the bladder they may escape observation, unless carefully looked for by means of the microscope.

This purely functional disease soon gives rise to chronic inflammation of the parts concerned, particularly the mucous membrane of the urethra, near the prostate gland, including the ejaculatory ducts and vesiculæ seminales, and the follicles of the prostate gland, and, if allowed, gradually extends to the bladder, up the ureters to the kidneys, laying the foundation of irreparable disorganization of those organs. The causes from which it more commonly arises are masturbation, venereal excesses, hæmorrhoids, irritation of the genitals, or neighbouring parts by friction, cutaneous diseases, constipation, &c.

In the treatment of spermatorrhœa, we must, in the first place, endeavour to correct the state of mind of the patient. This is generally no easy affair, for the miserable subject of this disease, especially when arising from masturbation, is so much wrapt up in his malady, that he can with difficulty direct his thoughts to any

other subject, or restrain himself from practices which aggravate his condition. Every means must be used to improve his moral feelings, and to restrain his imagination. He must not be left alone more than is unavoidable, and his mind should be directed to useful occupations and amusements. Still, fatigue must be avoided. If the patient reside in town a change of air may be recommended. Some dry bracing part of the country may be selected. In addition to this, probably some tonics may prove serviceable, particularly small doses of iron or quinine. The bowels must be regulated by the administration of occasional aperients, and the diet should be easily digestible and simple. Generally, stimulants prove injurious, but if they agree with the patient, a moderate quantity may be allowed. In a large proportion of cases the digestion is so impaired, and the patient so observant of every trifling change in his condition or feelings, that the medical man is compelled from day to day to task his ingenuity for some novelty to quell his anxiety and reassure him.

Tepid bathing in fresh or salt water, or sponging of the surface generally to diminish the sensibility of the skin, will generally be of service; and in cases where the genitals are much relaxed, a douche may be used with advantage.

In the majority of cases, in addition to the above treatment, we must direct our attention to the local state as well. The irritability of the urethra will probably require the introduction of a bougie occasionally — once in every three or four days. Should this fail in lessening the susceptibility of the canal, we must resort to a slight cauterisation of that part of the membrane which feels tender on the passing of the bougie. For this purpose the caustic catheter of M. Lallemand will be found to answer admirably.

“Before proceeding to cauterisation, it is indispensably necessary to introduce a catheter; for the double purpose of taking the exact length of the urethra, and of completely emptying the bladder. On slowly withdrawing the instrument, during the escape of the urine, the stream is arrested as soon as the eyes of the catheter enter the canal, and recommences when they are pushed again into the bladder. The penis being then moderately stretched, the thumb and fore-finger should be applied to the instrument at the point of the glans. When the catheter is withdrawn, the distance between the finger and thumb and its eyes gives the exact length of the urethra, and this must be immediately marked on the porte-caustique, the eyes of the catheter being applied to its olivary extremity, and the position of the fingers indicated by fixing a little slider on the stem of the instrument. When the porte-caustique has penetrated so far into the urethra that this slider touches the point of the glans, — the penis being in exactly the same state of elongation in which it was when the catheter was introduced, — it is clear that its olivary extremity will be in precisely the spot previously occupied by the eyes of the catheter, when the length of the canal was taken, — that is to say,

at the commencement of the neck of the bladder, — a position which it is highly important to the operator to be assured of.”

The patient should be reclining during the operation. “As the olivary extremity of the instrument approaches the neck of the bladder, the irritability of the passage increases, and the patient’s agitation often becomes so great as to inconvenience the operator. The instrument should now be allowed to pass on by its own gravity, attention being paid to detect the moment when the olivary body passes the neck of the bladder; as soon as this happens the instrument should be gently withdrawn, so as to bring its olivary extremity slightly within the neck of the bladder, and firmly held in that situation, while the outer tube is a little drawn back, and the euvette *very rapidly* passed over the inferior surface of the prostate, by slightly turning the stem attached to it; the instrument should then be *instantly* closed, and slowly withdrawn from the urethra.”

After this operation the patient must remain quiet, and should any inconvenience beyond scalding and slight hæmorrhage in making water occur, he should use the warm bath and take opiates, with diluents, and aperients.

The operation should not be repeated in less than a fortnight to three weeks, if necessary; the curative effects of it can scarcely be expected in a shorter period.

The complications of this disease — such as cutaneous eruptions, &c. — must of course be specially treated. For information on these subjects, the reader is referred to them in this work.

Vide Lallemand’s “Spermatorrhœa,” translated and edited by H. I. McDougall; also Curling “On Diseases of the Testis.”

LEUCORRHŒA, FLUOR ALBUS, OR WHITES.

LEUCORRHŒA may be said to be present wherever there is an excessive and morbid increase of the natural secretion from the mucous membrane which lines the vagina, uterus, and Fallopian tubes.

The discharge may proceed from the whole or only a part of that surface, and according to its presumed source the disease has been called Leucorrhœa Vaginæ, L. Cervicis, and L. Uteri. Its most common source is from the vagina only, but in many cases both the neck and cavity of the uterus are implicated.

The discharge varies both in colour and consistency in different females, and in the same person at different times. Sometimes it is watery, at others glutinous and transparent, like the white of an unboiled egg. It may become puriform and acquire a yellow, a green, or a brown colour. It is generally inodorous, but is occasionally fetid when there exists some organic disease. Generally it is of a mild nature, but now and then it becomes sufficiently acrid to excoriate the neighbouring parts.

Leucorrhœa is most common between the ages of 15 and 48,

and generally (when uncomplicated) disappears spontaneously with the cessation of the catamenia.

Leucorrhœa vaginæ, when acute and recent, occasions considerable itching, heat, and swelling of the parts; and during this stage the discharge is thin and serous, and is attended with some heat in passing the water.

In a few days, under proper treatment, these symptoms subside, the disease disappears or passes into a mild or chronic state, which in the majority of women may be considered as a mere inconvenience.

When the os and cervix uteri (*L. Cervicis*) are affected there is a constant heavy pain referred to the bottom of the sacrum, or as low as the os coccygis. This pain is increased by any active exercise, and, on examination per vaginam, it is found that the pressure of the finger on the cervix can scarcely be tolerated, and occasions lancinating pains in the groin. The speculum has been of late much employed in this variety of leucorrhœa, and by it we ascertain that the neck of the womb is red and inflamed, and occasionally ulcerated.

Leucorrhœa of the cavity of the uterus (*L. Uteri*) can frequently be distinguished by the intermittent nature of the pains. The discharge seems to accumulate gradually until the organ is stimulated into efforts resembling those of labour, and after a few hours of severe pain a sudden gush of fluid takes place, with great temporary relief. It is a most obstinate form of the disease, and is frequently the cause of sterility.

Among the causes of fluor albus are usually enumerated immoderate coition, masturbation, injuries to the parts by difficult and tedious labours, frequent miscarriages, immoderate menstruation, poor diet, a sedentary and inactive life, and, in fact, all causes which deteriorate the general health. M. Lagneau even asserts that in Paris the habitual use of strong coffee is sufficient to produce it, and that many have been cured solely by a strict abstinence from this beverage.

In the acute form of leucorrhœa a strictly antiphlogistic treatment must be pursued; cupping on the sacrum, and the application of leeches to the groins, to the vulva, or even to the os uteri are occasionally requisite. Saline purgatives, warm hip-baths, and injections of warm water into the vagina will also be of essential service. By these means the disease may be often perfectly cured, and prevented from degenerating into the chronic state. In confirmed chronic leucorrhœa it will be necessary both to support the general health, and to give tone to the affected organs.

The strength should be maintained by a mild and nutritious diet, gentle carriage exercise, tepid or cold baths, and a course of bark or quinine, with the mineral acids.

For restraining the excessive discharge the tinctura ferri sesquichloridi, in doses of ten or fifteen minims, three times a day, and the ergot of rye, in doses of ten grains, three times a day, have

been recommended on high authority. The balsams of Peru or copaiba, with or without the addition of the tinctura cantharidis, are also occasionally of service. The application of a blister to the sacrum has, in some cases, been attended with advantage. The most effectual agents, however, which we possess for controlling the discharge are injections into the vagina twice or three times a day by means of the female syringe or elastic bottle. The most useful are the solutions of alum, sulphate of zinc, acetate of lead, and nitrate of silver.

One drachm of the sulphate of zinc, or of alum, or of acetate of lead, to a pint of water forms a sufficiently strong injection. The nitrate of silver should never be used at first in a larger quantity than two grains to the ounce of distilled water.

It will often be necessary to vary the injection as it loses its efficacy, and it will be better to substitute one salt for another, rather than increase the strength of the one first employed.

In children, during dentition, we often see a species of leucorrhœa, which seldom extends beyond the vulva. One or two aperient powders, with the warm bath, or the use of the lead lotion, removes the complaint in a few days.

ORDER V.

EPISCHESES.

SUPPRESSION of excretions.

OBSTIPATIO, OR COSTIVENESS.

COSTIVENESS is to be considered either as constitutional or symptomatic; but in general it prevails as the latter.

The word implies a retention of the excrement, accompanied with an unusual hardness and dryness of the evacuations, so as to render their being voided difficult, and sometimes painful.

Sedentary persons are peculiarly liable to habitual constipation, especially those of a sanguineous and choleric temperament; or who are subject to hypochondriac affections, — the gout, acute fevers, or a diseased state of the liver and spleen.

Costiveness is frequently occasioned by neglecting the usual times of going to stool, and checking the natural tendency to those salutary excretions; by an extraordinary heat of the body and copious sweats; by receiving into the stomach a larger proportion of solid food than is proper for the quantity of fluids swallowed; by a free use of opium; and by taking food that is dry, heating, and difficult of digestion. Drinking freely and frequently of Port wine may likewise occasion costiveness.

With the defect of stools there sometimes exist nausea, want of appetite, flatulency, pains in the head, and a degree of febrile heat.

The disease is to be obviated by an attention to diet, by observing certain regular periods for soliciting motions, and where these fail, by having recourse to laxatives.

The diet of such as are of a costive habit ought to consist a good deal of vegetables and ripe fruits, and their ordinary drink of malt liquors.

With respect to the second object to be attended to, a habit of regularity should be endeavoured to be established by the person's going at a certain hour or hours each day, and making proper efforts at each period for promoting an evacuation. If a natural inclination arises at any time, this ought likewise to be encouraged.

The laxatives most proper for obviating costiveness are those which afford the least irritation *, but which will at the same time procure one or two motions daily.

Persons of a costive habit of body, and particularly pregnant women, are very apt to make use of Anderson's pills, which are composed wholly of aloes, with a little oil of aniseed to prevent the griping effect of the former; and indeed these pills have acquired an extensive reputation. In phlegmatic constitutions they may, indeed, be used occasionally with some advantage possibly; but in pregnant women, or those of a bilious habit, where the bowels are naturally irritable, they cannot fail to do harm. Their operation

* R Potassæ Tartratis, ʒss.
Mann. Optim. ʒij.
Aq. Fervent. f. ʒiij.
Tinet. Jalapæ, f. ʒij. M.
Capiat dimidium pro dos.

Vel,

R Infus. Sennæ Compos. f. ʒv.

Magnes. Sulph. ʒss.

Syrup. Rhamni, f. ʒij. M.

Sumat ʒij. pro dos. et repetatur post horas tres, si sit necessitas.

Vel,

R Ol. Ricini, f. ʒvj. pro dos.

Vel,

R Elect. Sennæ, ʒij.

Potassæ Supertart. ʒij.

Pulv. Jalapæ, ʒj.

Syrup. Zingib. q. s. M.

ft. Electuarium, ejus quantitatem juglandis horâ somni sumat.

Vel,

R Pilul. Rhei Comp. gr. xv. in pilul. iij. pro dos. dividend.

* Take Tartrate of Potass, half an ounce.
Manna, two drachms.
Hot Water, three ounces.
Tincture of Jalap, two drachms.
Mix them, and let the half be taken for a dose.

Or,

Take Compound Infusion of Senna, five ounces.

Sulphate of Magnesia, half an ounce.

Syrup of Buckthorn, two drachms.

Mix them. Four table-spoonfuls may be taken for a dose, and the same quantity be repeated in three hours if the bowels are not sufficiently moved.

Or,

Take Castor Oil, six drachms for a dose.

Or,

Take Electuary of Senna, two ounces.

Supertartrate of Potass, two drs.

Powdered Jalap, one drachm.

Syrup of Ginger, a sufficiency to form an electuary, of which let the bulk of a walnut be taken occasionally at bedtime.

Or,

Take Compound Rhubarb Pills, fifteen grains, divided into three pills for a dose.

is confined in a great measure to the lower part of the rectum, and they are thereby apt to induce piles. The use of every purgative medicine, moreover, creates a necessity for its repetition, and by this repetition the bowels lose their energy, their delicate nerves become torpid to the stimulus of the food and drink, and the secretions formed from them. A natural discharge of the contents of the bowels ought therefore to be solicited by those of a costive habit, in preference to the habitual use of any kind of purgative whatever.

Obstinate constipation arising from inflammation of the bowels (see p. 349.), or from colic (see p. 691.), has been already considered. Under the latter head we have considered several of the more usual causes of obstinate constipation; such as intus-susception, strangulated hernia, and constriction of the intestine, either from organic disease producing stricture, or from a band of false membrane acting as a ligature on the bowel. In all these cases active cathartics must be most carefully avoided. Where the cause is not removable by a surgical operation, opium appears to soothe and prolong the life of the patient.

ISCHURIA ET DYSURIA, OR SUPPRESSION AND DIFFICULTY OF VOIDING URINE.

WHEN there is a frequent desire of making water, attended with much difficulty in voiding it, the complaint is called dysuria, or strangury: and when there is a total suppression of urine, it is known by the name of ischuria. This last may properly be considered of two kinds, — viz. ischuria vesicalis, where the urine, although lodged in the bladder, is prevented from being voided; and ischuria renalis, wherein there is a defect of the ordinary secretion in the kidneys.

DYSURIA, DIFFICULTY IN MAKING WATER; AND ISCHURIA VESICALIS, RETENTION OF WATER.

THE urine, when secreted, may be unduly detained in its progress to or from the bladder, constituting the conditions styled "*Dysury*, or simple difficulty in making water; *Strangury*, extreme difficulty in making water; and *Ischury*, absolute inability to make any water at all — three names which are to be understood as expressing but so many degrees of a variety of morbid states, the most prominent feature in each of which is a difficult or obstructed discharge of the urine."

These conditions, frequently arising as they do from the same causes, gradually merge into each other, and thus become essentially identical, and, with but slight modifications, require the same general plan of treatment.

Like incontinence, and suppression of urine, they are to be regarded rather as symptoms or effects of disease than as diseases

themselves. Thus each may arise during the progress of acute or inflammatory affections, or from severe irritation of the kidneys or bladder, or any of their accessory structures, from obstruction, or any cause by which the expulsive power of the bladder is rendered inadequate to overcome the resistance of the sphincter.

In fevers, difficulty in making urine or absolute retention is by no means an uncommon circumstance, and depends on either over-excitement of the mucous membrane of the bladder by acrid secretion, or on atony of the muscular fibres of the organ. Serious accidents affecting the head or spine, or injury to the abdomen, or fracture of the leg or thigh, or wounds or contusions of the perinæum, injury or disease of the kidneys, ureters, bladder or urethra, or calculous concretions in any of these structures, the irritation of these parts arising from cantharides taken internally, or absorbed from a blister, hæmorrhage attended with coagulation of blood in the bladder or urethra, tumors pressing on these structures, particularly the enlarged prostate gland of advanced life, or abscess or inflammation consequent on gonorrhœa, &c., may, at any period of life, give rise to one or other of these states. Whenever absolute retention of urine occurs, and from whatever cause, it is attended with imminent peril, and soon gives origin to a series of most formidable symptoms.

“Thus the patient may be sitting with his friends after dinner, when he feels an inclination to make water; in attempting to do so, however, he is disappointed. A second and third attempt are made after some time, and all without success. Now the case assumes a more serious aspect. An indescribable uneasiness is felt in the region of the bladder. The efforts to void the urine are no longer voluntary. The patient is compelled to strain, and the whole of the abdominal muscles are in convulsive action; instinctively endeavouring to relieve the bladder of its contents, but still to no purpose. The bladder may be felt hard and enlarged above the pubes. The heart sympathises with the local irritation, the pulse is hard and frequent, the face flushed, the skin hot, and the tongue is covered with a white fur. The violent efforts of the patient force out a few drops of urine, which give some relief; but the kidneys go on secreting, and the relief is only temporary.” Should this condition remain unrelieved the bladder may rupture, and its contents pass into the cavity of the peritoneum; or the urethra may give way, and the urine become extravasated into the cellular tissue of the scrotum and abdomen. The former event necessarily destroys the patient; the latter very frequently, in spite of every remedy, produces extensive sloughing, or even death.

But the disease, after a time, may subside, and the parts return to their former condition: the patient, however, is subject to repeated attacks, which ultimately lead to serious organic changes in the structure of the bladder. The mucous membrane inflames, and its secretion becomes much altered and increased; instead of

being a mere defence to the tunica, it is now poured into the bladder in enormous quantity, and increases the patient's distress by reacting on the urine and evolving ammoniacal products. This irritates the membrane to further secretion, and the bladder can now but seldom, if ever, be emptied; and as the disease progresses, the efforts necessary for micturition increase, and the muscular coat of the bladder thickens in proportion. The inflammation leads to ulceration and spreads up the ureters to the kidneys, producing disease in them, which rapidly undermines the patient's health still more, and terminates his existence.

Under other circumstances, the bladder may gradually distend so as to contain many pints of urine, and thus be mistaken for ascites: or, having accumulated to such a degree that the distending force equals the resistance, the urine then dribbles away involuntarily, producing one form of incontinence. Thus the bladder is saved from rupture, but the urine, so confined, soon gives rise to inflammation and the consequences just detailed. This condition is peculiarly apt to be over-looked, for as so much water is constantly passing, the attendants little imagine it to be due to this cause.

In cases of complete retention, the bladder has been known to contain as much as eight pints, and rupture has seldom taken place before the third or fourth day.

The less severe cases of dysuria consequent on stricture and enlarged prostate gland, so frequently met with in practice, may continue over a term of many years, and often make such slight progress that they scarcely appear to abbreviate life. In many, the coats of the bladder are thickened to the extent of even an inch, and the ureters and kidneys are dilated and attenuated into mere membranous sacs.

Retention dependent on obstruction of the ureter is generally rapidly fatal, by producing actual suppression of the secretion of both kidneys.

In the treatment of this disease we must have regard to the varied circumstances under which it occurs; and these indeed are so numerous, that only an approximation to a complete classification of them can be made here. We would earnestly guard the young surgeon against the practice of indiscriminate use of the catheter, so commonly adopted for the relief of retention. The cause of the patient's suffering is usually so apparent, and the remedy in the power of the surgeon so easily applied; and, moreover, the distress the patient suffers renders him so peculiarly pliant to any suggestion offered for his relief, that there is little reason for wonder that this practice should so invariably be adopted. Nevertheless, it is often attended with the most serious and lasting consequences to the patient, when even successful in diminishing his present distress, for, the canal being contracted and inflamed, only a small instrument can be expected to pass: thus laceration and false passages are easily produced, or the inflammation is at

least increased by mechanical interference, and the relief rendered thereby only very temporary. On the other hand, the advantage gained by the use of warm baths, opiates, aperients, and rest, will generally be found to exceed that obtained by the catheter, and at the same time do much towards the ultimate treatment of the case, without risk of producing further mischief.

It is also advisable to use the elastic, rather than silver, catheters in all cases dependent on irritation of the passage; and indeed, wherever their use is practicable, they will be found to inflict much less pain and injury than metallic ones: but we admit there are many cases in which the latter are required.

In the first place, we will suppose a case of dysuria, or retention, dependent on a stricture which has been gradually increasing for some time, when from cold, or drinking some fluid which increases the acidity of the urine,—such as acid wines, or punch,—a serious aggravation takes place, the patient being able to pass water only with great difficulty, or not at all: under these circumstances, he may be placed in a hot bath (98° — 104°) till he feels faint, and then removed to a warm bed; should he not be able to pass any water now, he may take the following draught: tincture of opium \mathfrak{m} xx.—xl., bicarbonate of potash \mathfrak{z} ss.— \mathfrak{z} j., spirit of nitric æther \mathfrak{z} j.— \mathfrak{z} ij., camphor mixture \mathfrak{z} j.

An enema, consisting of castor oil \mathfrak{z} j., gruel Oss, may be administered, and if there be much pain or tenderness of the perinæum, a dozen leeches may be applied. Under this treatment we shall generally find the symptoms subside, and the patient enabled to pass water voluntarily; but if, after giving them a fair trial, the patient's distress continues, recourse must be had to the catheter. Cases will occasionally occur in which the most skilful will fail in introducing this instrument into the bladder: under such circumstances it is advisable to continue the above detailed treatment until the urgency of the case subsides or demands puncture of the bladder.

In those cases of dysuria or retention which occur during fevers, or follow injury to the head, &c., the catheter affords the obvious remedy. When there is deficient power of the muscular coat of the bladder, probably arising from over-distension in the first instance, the catheter must be introduced periodically, so as to prevent any great accumulation; and, in addition to this, Dr. Willis recommends a course of tonics, especially those of bark and iron with the infusions of uva ursi, Pareira brava, and diosma erecta.* Blisters to the sacrum, cold or tepid bathing, and the cold water douche to the perinæum and pubes may also be used.

Nux vomica and secale cornutum have also been given occasionally with advantage, and the tincture of cantharides in small doses. When dependent on hysteria it is particularly important that the catheter should not be introduced, for if once commenced, its con-

* See Dr. Willis on Urinary Diseases, Sir B. Brodie's Lectures on the Urinary Organs, and Dr. Wood on the Practice of Medicine.

tinuance is almost always required, and becomes associated with a perverted moral condition that generally proves most obstinate. Moreover, its introduction in such cases is seldom, if ever, absolutely necessary: the cold bath, or douche, to the genitals will usually suffice.

ISCHURIA RENALIS, ANURIA, SUPPRESSION OF URINE.

By this title is meant such a diminution of the actual secretion as is evidently morbid: it may be partial or complete. Both these conditions occur frequently in practice, being mere symptoms of other diseases. Thus, in cholera it has been observed that no urine is secreted for many hours, or even days; and in all febrile and inflammatory affections there is generally a marked deficiency of urine.

Though suppression of urine may probably be considered, under all circumstances, as symptomatic, there are still cases in which our limited science fails to recognise the pathological change in the system or kidney, on which this manifestation of disease depends. We are therefore obliged to consider these as special diseases.

Under all these conditions care must be observed that *retention* of urine be not confounded with *suppression*.

It is difficult to determine at what point of reduction the renal secretion can be considered as morbid; the quantity is often very much diminished in health, and sometimes only a few ounces are passed daily for a considerable time, without serious inconvenience. The best rule, perhaps, is to treat every case as morbid in which the secretion is reduced, for any length of time, much below the healthy standard of the individual, without obvious cause,—such as excessive perspiration, or extraordinary abstinence from drink. Complete suppression of urine, if of long duration, is almost always fatal; but instances are mentioned in which none has been passed for fifteen days. Partial suppression may last for an indefinite period.

Persons of all ages appear liable to this disease, but it is most common in infancy and old age.

“In the adult the symptoms of the disease in the earlier periods are those merely of impending illness; the patient makes little or no water, and feels anxious, restless, and out of sorts, to use a vulgar phrase, without being able to say exactly what ails him. Closely questioned, indeed, and his attention directed to particular parts, he will own to some degree of uneasiness, occasionally to some degree of pain in the lumbar region, which now and then strikes round the flanks, and seems even to possess the abdomen pretty generally. A certain degree of nausea now begins to be complained of, and this before long very commonly proceeds to the length of causing vomiting, which continues afterwards to form one of the most constant and troublesome symptoms of the malady. There is at the same time very generally

associated a singular degree of torpor of mind and body, marked by disinclination to motion and to occupation of any kind; the patient has mostly a dull and abstracted look, unless when immediately engaged by those about him. When questioned as to his state, he says he feels very well; and it is generally only when particularly interrogated that he remembers it must be many hours since he passed any urine. The pubic region is examined, and is found without fulness or pain. To have assurance that the bladder is not distended, he is requested to make water; after some delay, he probably passes a spoonful or two, probably he cannot, with all the good will in the world, void a drop. A catheter is now introduced into the bladder, to be quite certain that there is no mistake, and half an ounce, a few drops, or not a single drop of urine is discharged.

“The practitioner, now fully aware of the imminent danger in which his patient is placed, speaks of the necessity of instant and active measures for his relief, the propriety of which is not at all obvious to the uninitiated; for the pain or uneasiness complained of at first has probably subsided, the pulse is not accelerated, and though there may be some sickness and a good deal of depression, these are not commonly considered as symptoms of any great moment. But the patient at this stage begins to be affected with drowsiness, and is observed to wander and to talk incoherently; often, too, he eructates frequently, and is apt to be worried by the hiccup. The drowsiness increases, and in the course of a day or two, goes on to coma. By and by convulsions come on; these recur again and again, and before long the life of the patient is at an end.”

The progress of the disease varies much, but when the suppression is complete, generally coma comes on about the fourth or fifth day and death quickly follows.

Dr. Willis (from whose work the above quotation is taken) gives the following account of this disease in children:—“Infants affected in this way void very small quantities, often only a few drops at a time, of extremely high coloured urine, which stains the linen of a deep reddish yellow. It seems to be passed with great pain, and very much as if it were molten metal, the little patients drawing their legs up to their belly, and crying bitterly as it comes away; and it very obviously seals the surfaces over which it passes, and excites inflammation in the mucous lining of the bladder and urethra, as appears by the increased quantity of mucus which before long begins to be excreted along with the urine. The skin is hot and dry, the thirst is increased, and the bowels are obstinately constipated; the faeces are only voided in the shape of little rounded masses like marbles; the digestion, too, is obviously impaired, and the breath smells strongly of vinegar. As in many other urinary affections, the skin in this one is generally irritable, and the seat of eruptions of different kinds. It is always kept whole with great difficulty; wherever two surfaces are in contact,

they almost certainly inflame, and by and by pour out a thin, sharp, fetid fluid, which causes the mischief to spread. And in adults on the decline of life the disease sometimes occurs much in the same way." It arises slowly, with constipation, rough and dry skin, dyspepsia, anorexia, eructations, cramp in the stomach, thirst, irritation of the skin, and pain in the lower extremities, with more or less tenesmus and scalding.

In fatal cases the kidneys have been found much inflamed with ulceration of the mucous membrane, abscess in the substance of the gland, and in the cavities of the organ. Amongst the exciting causes of the disease cold probably is the most frequent; but it has also been attributed to violence done to the kidneys or loins, the genital organs, or perinæum. Calculous conerctions lodged in the kidneys or ureters, so as to impede the passage of the secretion, have been known to produce suppression of urine; and it occasionally takes place after surgical operations; from an overdose of cantharides, or corrosive sublimate; or injury or disease of the spinal cord.

The cause of death appears to be principally dependant on the non-elimination of urea, which acts as a poison on the brain and nervous system at large.

In the treatment of suppression of urine, early venesection has been much recommended. Blood may also be abstracted from the region of the kidneys by cupping, and the warm bath will generally be indicated. Antimony may also be given in the inflammatory cases, in considerable doses, combined with saline purgatives and digitalis, or squills, nitrate of potassa, or nitric æther; or the bitartrate of potassa in divided doses amounting to ʒj. ʒij. in the twenty-four hours. Emetics, the vapour bath, hot air bath, large and repeated blisters to the loins, the alkalies, or alkaline carbonates, tincture of cantharides, or oil of turpentine, with the free use of diluents, and a restricted vegetable diet, furnish remedies appropriate for the peculiarities of this disease.*

AMENORRHŒA, OR INTERRUPTION OF THE MENSTRUAL FLUX.

AMENORRHŒA is to be considered as of two kinds; the one where the menses do not begin to flow about the period of life at which they generally appear; and the other where, after having made their appearance, they cease to return at their usual periods from other causes than conception. The term of retention has been applied to the former, and that of suppression to the latter.

Menstruation seems evidently to give a disposition to the female organs of generation to be acted upon by the male semen so as to

* Vide Urinary Diseases and their Treatment, by Robert Willis, M. D.; also a Treatise on the Practice of Medicine, by George B. Wood, M.D., Philadelphia.

fit them for impregnation, as women seldom, if ever, bear children before they have menstruated, and few or none ever become pregnant after the total cessation of this discharge. Whether or not the blood which should have passed off by menstruation, contributes to the formation and nutriment of the fœtus in utero, is looked upon as a matter of doubt: that it does not is the opinion most generally entertained.

An ingenious solution of the problem, Why nature should have doomed the human female to the menstrual discharge? has been offered by Mr. Abernethy.* It can only be solved, he remarks, by supposing that it relieves uterine irritation, and mitigates the extreme of sexual desire, thus enabling a woman to conform to the laws of morality, and the social compacts that are established between us.

In warm climates menstruation takes place at a much earlier period of life than in cold ones, as in the former it often makes its appearance at the age of ten or eleven years; whereas, in the latter, it is seldom to be observed before fifteen or sixteen. It also ceases much sooner with women who reside in warm climates than it does with those who are inhabitants of cold ones; as, in the former, menstruation is not often to be observed after the age of forty: whereas, in the latter, it seldom stops before that of forty-five, and is in many instances extended to fifty years.

Some women begin to menstruate without any previous indisposition; but with most of them the first appearance of the discharge is preceded by a swelling or enlargement of the breasts, together with a sense of fulness at the lower region of the belly, pains in the back and inferior extremities, and some slight hysterical affections, all of which cease as soon as the flow of blood or menstrual secretion takes place.

For the two or three first times of its appearing it is apt to be somewhat irregular, both as to the quantity of blood which is discharged and the period of its return; but after these it usually observes stated times, and nearly the same quantity is lost at each visitation, unless some irregularity ensues.

To ascertain the quantum generally discharged with exactness is impossible, as this varies in different women, and greatly depends on the constitution. Those of a delicate habit and lax fibre have a more copious and a longer continued discharge than women of a robust constitution. In general, however, the menses continue to flow from four to six days, and the quantity of blood discharged is about five ounces.

Pregnant women, and those that suckle children, do not usually menstruate during such processes.

* See his *Physiological Lectures* delivered before the Royal College of Surgeons in the year 1817.

CHLOROSIS, OR RETENTION OF THE MENSES.

CHLOROSIS may often be traced to circumstances which obviously debilitate the body, such as the want of pure air and exercise, sedentary employments, want of wholesome, nutritive food, and great anxiety of mind, and it seldom originates after the age of twenty-four.

The immediate cause of this disease seems to be a want of power in the system, arising from weakness, to propel the blood into the uterine vessels with a force sufficient to open their extremities, so as to allow of a discharge of blood from them; but the origin of the weakness which appears at this particular period of life, we are wholly unacquainted with. Some have referred it to a certain state or affection of the ovaria, between which and the uterine vessels there is a seeming connection.

The mere want of the discharge at the usual period of life may not produce the disease, for frequently it does not appear until seventeen or nineteen years of age, without producing any morbid affection. This is not to be considered as morbid unless the system is evidently deranged thereby. In many cases, however, morbid symptoms do appear, which are evidently connected with the defect of the menses, and go off upon its discharge.

The supposed connection of chlorosis with defective menstruation as its cause, and with the restraints imposed by the laws of society on certain natural appetites and passions, has been combated by a late writer*, and he thinks that the leading symptoms may be readily explained by a reference to the state of the *primæ viæ*. Costiveness always precedes and accompanies the other symptoms. This induces, he says, the feculent odour of the breath, disordered stomach, depraved appetite, and impaired digestion, which preclude a sufficient supply of nourishment at a period of growth when it is most wanted.

In reporting this gentleman's ideas on the subject of chlorosis, I cannot avoid observing, at the same time, that since the publication of his work on the utility of purgative medicines, it has become too prevalent to attribute a long catalogue of diseases as consequential affections upon a disordered state of the digestive organs, or *chylopoietic viscera*, many of which, in my humble opinion, arise from other causes.

Heaviness, listlessness to motion, fatigue on the least exercise, palpitations at the heart, pains in the back, loins, and hips, as also in the left side (about the region of the spleen), flatulency, and acidities in the stomach and bowels, costiveness, a preternatural appetite for chalk, lime, and various other absorbents, together with many dyspeptic symptoms, usually attend on chlorosis; sometimes the head is affected, and constant headache with giddiness on

* See Observations on the Utility of Purgative Medicines in several Diseases, by Dr. James Hamilton, of Edinburgh.

stooping, and paroxysms of epilepsy, are the urgent symptoms. In some cases the arterial system is much affected, and the leading symptoms are hæmorrhages from the nose, stomach, and lungs, a flushed face, and a loaded state of the tongue.

As the disease advances in its progress, the face becomes pale, and afterwards assumes a yellowish hue, even verging upon green, from whence it has been called a *green sickness*; the lips lose their rosy colour; the eyes are encircled with a livid areola; the whole body has a leucophlegmatic appearance, with every indication of a want of power and energy in the constitution; the eyelids are swelled in the morning, the feet are affected with œdematous swellings; there is great languor, listlessness, and aversion to all kinds of motion or exercise; the breathing is much hurried by any vigorous exertion of the body; the pulse is quick, but small; and the person is apt to be affected with a cough, and with many of the symptoms of hysteria and previous irritability; the appetite is bad and sometimes strangely depraved. The dyspeptic symptoms are frequently very distressing. Sometimes a great quantity of pale urine is discharged in the morning, and not unfrequently hectic fever attends.

To procure a flow of the menses proves, in some cases, a very difficult matter; and where the disease has been of long standing, various morbid affections of the viscera are often brought on, which at length terminate fatally. By marriage, and a change in the mode of life, the disorder has in several instances been removed.

Dissections of those who have died of chlorosis have usually shown the ovaria to be in a scirrhus or dropsical state. In some cases, the liver, spleen, and mesenteric glands have likewise been found in a diseased condition.

The cure of the disorder is to be regulated on the plan of increasing the tone of the general system, and of exciting the action of the uterine vessels by stimulants.

The first of these is to be effected by a generous, nutritive diet, with a moderate use of wine; by gentle and daily exercise, but more particularly on horseback; by associating with agreeable company, so as to keep the attention engaged, and the mind tranquil and amused; by a change of air, and cold bathing during the summer season; and by a regular use of tonic medicines, as the cinchona, quininæ sulphas, infusum gentianæ compositum, infusum quassiae, &c., together with mineral acids and especially chalybeates*, various forms of which will also be found under the head of Dyspepsia.

* R. Myrrh. Pulv. ʒss.
 Ferri Sulphat. ʒj.
 Sodæ Subcarbon. gr. xv.
 Extract. Cinchon. ʒj.
 Syrup. Zingib. q. s. M.

* Take Powdered Myrrh, half a drachm.
 Sulphate of Iron, one scruple.
 Subcarbonate of Soda, fifteen grs.
 Extract of Peruvian Bark, one
 scruple.
 Syrup of Ginger, a sufficiency to

Previous to a use of these medicines, it may, however, be advisable to give a gentle emetic, for the purpose of elcansing the stomaeah, and freeing it from aeidities and inactive fluids, afterwards paying attention to securing regularity in the alvine evaeuation throughout the employment of the tonic medicines.

Where great languor, lowness of spirits, and disposition to hysteria prevail, the eamphor mixture, conjoined with the spiritus ammoniæ aromaticus and spiritus lavendulæ compos., may be prescribed with advantage in addition to tonics.

Chlorosis (a disease which is at all times much relieved by steel, and will bear it even where there is a considerable degree of feverish irritation) is often entirely removed by a course of Bath water; and its use as a bath and by pumping will greatly contribute to remove that languor of circulation, and obstruction of the natural evaeuations, which constitute the leading features of this troublesome disorder. Women of an irritable habit should not, however, drink more than a pint a-day. The benefit of the Bath waters is sometimes not quickly observed; but their action in uterine affections, although slow, is nevertheless sure.

Tunbridge-well water is another ehalybeate which frequently proves serviceable to chlorotic women. To those of a weak, irritable stomaeah, the fresh-drawn water is apt to prove too cold, and to occasion a nausea or sickness which always defeats the general intention of the medicine. This inconvenience is to be prevented by giving the water a tepid warmth; and to do this, it is by far the best method to put it into a bottle closely corked, and to im-

ft. Massa, pilulas xxiv. dividenda, quarum
duas sumas bis terve de die, cum cochl.
amplis duobus misturæ sequentis :—

R₃ Infus. Gentian. Comp. f. ʒvj.

Tinct. Cinchon. C.

———— Cardam. C. āā f. ʒss. M.

ft. Mistura.

Vel,

R₃ Tinct. Ferri Sesquichloridi, f. ʒj.

Cujus sumantur m̄ xv. ter de die ex cy-
atho aquæ frigidæ, aut Decocti Cin-
chonæ.

Vel,

R₃ Pulv. Myrrh. ʒj.

Solve in

Spirit. Cinnam. f. ʒij. et adde

Aq. Pimentæ, f. ʒx.

Ferri Sulphat. gr. v.

Potassæ Subcarbonat. gr. viij.

Syrup. Simpl. f. ʒj. M.

ft. Haustus, ter in die adhibendus.

form the mass, which is to be divided
into twenty-four pills, and two to be
taken twice or thrice a-day, washing
them down with two table-spoonfuls of
the following mixture :—

Take Compound Infusion of Gentian,
six ounces.

———— Tincture of Bark,
———— Carda-
moms, of each half an ounce.

Mix them.

Or,

Take Tincture of Muriate of Iron, one
ounce.

The dose may be fifteen drops thrice a-day
in a glassful of cold water, or a Decoc-
tion of Peruvian Bark.

Or,

Take Myrrh, one scruple.

Dissolve it in

Spirit of Cinnamon, two drs.

And add

Pimenta Water, ten drachms.

Sulphate of Iron, five grains.

Subcarbonate of Potass, eight grs.

Common Syrup, one drachm.

Mix them. This draught is to be taken
thrice a-day.

merse the whole in hot water, for by this means but little of the carbonic acid escapes. During a course of this water, as well as of the former, it will be advisable to employ the warm bath occasionally, say twice or thrice a-week, the propriety of which practice is proved by daily experience. A bath of about eighty degrees will be highly serviceable; a colder one might do injury. Cold bathing has been tried in chlorosis during the summer months, but it has rarely been attended with success.

Pymont and Spa waters may likewise be found useful in this disease. As the former of these is very strong, and contains a large excess of carbonic acid, it will bear dilution with boiling water sufficient to bring the whole to a moderate temperature; but with the mild, weak chalybeates, such as that of Tunbridge, the method of warming it in the manner before mentioned is by far the best.

In using the Spa water, it will be most advisable to begin with a moderate quantity, not more than half a pint for a dose, which may be repeated three or four times in the day, and be gradually increased till some effect is produced on the secretions. Many patients, but more particularly those on the spot, are in the habit of diluting with this water the wine that forms their common drink, which makes a pleasant and salutary beverage.

The second intention of cure (viz. of exciting the action of the uterine vessels) is to be promoted by the exercises of walking, dancing, and jumping, by frequent friction, by putting the feet often into warm water, by heat applied to the organs of generation and lower region of the belly, in the form either of steam stupes or a hip-bath, by compression of the iliac arteries in obstinate cases, and by electric shocks passed through the pubic, hypogastric, and lumbar regions; the last of which, by being used at the same time with the above means, is more likely to be attended with a good effect. In all cases, venery is, however, the most certain and natural remedy.

Stimulating the rectum by purgatives is a mean which is likewise usually employed in chlorosis to excite the action of the uterine vessels. Those most in use are the drastic resins, such as aloes, &c., which may be given as advised below.* Mercury is

* Pilul. Aloes cum Myrrh. ʒj.

In pilulas xij. divid., quarum sumat iij. vel iv. pro dos.

Vel,

R̄. Pilul. Galban. C.

Aloes Spicat. āā ʒj.

Syr. Rhamni, q. s. M.

ft. Massa, in pilulas xxiv. distribuenda, quarum iij. vel iv. capiat horā decubitūs.

Vel,

R̄. Tinct. Aloes Comp. f. ʒij.—ʒss. pro dos.

* Take Aloëtic Pills, with Myrrh, one drachm.

Divide the mass into twelve pills, of which take from three to four for a dose.

Or,

Take Compound Galbanum Pill,

Socotrine Aloes, of each one drachm.

Syrup of Buckthorn, a sufficiency.

The mass is to be divided into twenty-four pills, of which let from three to four be taken occasionally on going to bed.

Or,

Take Compound Tincture of Aloes, from two drachms to half an ounce for a dose.

sometimes employed as a stimulant and deobstruent in this disease, and the preparation of it most used is calomel; but it is by no means universally approved of as a safe medicine. When given in cases of this nature it ought to be combined with some drastic.*

Some practitioners are in the habit of giving these stimulating purgatives twice a-week; but the preferable way seems to be that of employing them in a small but sufficient dose every night when the patient retires to rest, so as to keep up a regular and sufficient alvine evacuation.

The author of the observation before quoted tells us, that he has found the purgative plan very successful in chlorosis, but that it frequently requires great assiduity and perseverance to accomplish the end desired. The formation of this and many other diseases, he thinks, may be prevented wholly by promoting at all times, where nature is defective, a regular and sufficient alvine evacuation.

Besides purgatives, other stimulants, under the name of emmenagogues, such as savin, &c., have been employed in the cure of chlorosis; but they seem better calculated for a suppression of the menses than for a retention of them, as in this disease tonics and chalybeates are the most advisable. Should the practitioner, however, be disposed to make trial of them, he will find various forms of the same under the succeeding head.

If the desired effect is not produced by these remedies, we may, after a fair trial of them, recommend a tea-spoonful of the medicines advised below †, to be taken morning, noon, and evening, giving now and then an emetic of the eupri sulphas, as prescribed under the head of Phthisis Pulmonalis.

Should the patient, in the course of the disease, be troubled with

* R₃ Pulv. Scammon. cum Hydrargyri Chlorido, ʒj.
Syrup. q. s. M.
ft. Massa, in pilul. xij. distribuenda, iij. pro dos. sumendæ.

† R₃ Tinct. Cinchonæ, f. ʒjss.
—— Ferri Sesquichloridi, f. ʒj.
—— Cantharidis, f. ʒss. M.

Vel,
R₃ Tinct. Aloes C. f. ʒjss.
—— Helleb. Nigr.
—— Castor. āā f. ʒij.
—— Cantharidis, f. ʒss. M.

* Take of Powder of Scammony, with Calomel, one drachm.
Syrup, a sufficiency to form the mass, which is to be distributed into twelve pills. Of these three may be taken for a dose.

† Take Tincture of Peruvian Bark, one ounce and a half.
—— Muriate of Iron, one drachm.
—— Spanish Fly, half a drachm.

Mix them.

Or,
Take Compound Tincture of Aloes, one ounce and a half.
Tincture of Black Hellebore,
—— Castor, of each two drachms.
—— Spanish Fly, half a drachm.

Mix them.

acidities in the stomach, she ought then to have recourse to absorbents, as directed in Dyspepsia.

The liquor potassæ subcarbonatis, in small doses, frequently repeated, is a good medicine for palliating cardialgic paroxysms in chlorotic constitutions.

Some cases of obstructed menstruation are attended with local determinations of blood, particularly to the head, in which it may be necessary to take away a small quantity of blood by means of leeches to the temples, or the scarificator and cupping-glasses between the shoulders, in addition to promoting a regular and sufficient alvine evacuation from the bowels.

Where chlorosis is attended with symptoms similar to pulmonary consumption, it will be of considerable utility to administer a gentle emetic occasionally, keeping the bowels open at the same time. Myrrh combined with the sulphate of iron may also prove of much service. If there is pain in the side, the application of a blister over the part, or some warm plaster, will be proper; and if the cough be troublesome, squills may be used as an expectorant, with an opiate at bed-time. If the skin be permanently hot, or irregularly hot and cold, without any weakening perspiration, a tepid bath may be of some service, or we may substitute small doses of the saline mixture from time to time. In such cases emmenagogues would be of no use; nay, they might be detrimental. A removal into the country, with pure air and moderate exercise on horseback, will greatly contribute to a re-establishment of the woman's health. The diet ought to be light and nourishing. In many instances milk agrees well with the patient; but it is not necessary to restrict her from animal food of easy digestion. In the winter she should be removed to the southern part of our island, or to a milder climate, and wear flannel next to her body.

Occasionally retention of the menses is caused by an imperforate hymen. The patient suffers all the usual pains of menstruation, but no fluid escapes. This continues perhaps for some months, the stomach increases gradually in size, and when the accumulation is large a tumour will project even beyond the labia. The swelling can sometimes be ruptured by the finger, but generally a slight incision is required, and gives immediate and permanent relief.

MENSIUM SUPPRESSIO, OR SUPPRESSION OF THE MENSES.

ANY interruption occurring after the menstrual flux has once been established in its regular course, except when occasioned by conception, is always to be considered as a case of suppression.

A constriction of the extremities of the vessels of the uterus arising from accidental circumstances, such as cold, anxiety of

mind, fear, sudden terror or fright, inactivity of body, the frequent use of acids and other sedatives, &c., is the cause which evidently produces a suppression of the menses. In some few cases it appears as a symptom of other diseases, and particularly of general debility in the system. Herein there is a want of the necessary propelling force or due action of the vessels.

When the menstrual flux has been suppressed for any considerable length of time, it not unfrequently happens that the blood which should have passed off by the uterus, being determined more copiously and forcibly to other parts, gives rise to hæmorrhages; hence it is frequently poured out from the nose, stomach, lungs, and other parts, in such cases. At first, however, febrile or inflammatory symptoms appear; the pulse is hard and frequent, the skin hot, and there is a severe pain in the head, back, and loins. Besides being subject to these occurrences, the patient is likewise much troubled with costiveness, colic pains, and dyspeptic and hysteric symptoms.

Our prognostic in this disease is to be directed by the cause which has given rise to it, the length of time it has continued, and the state of the person's health in other respects. When menstruation is suddenly suppressed, in consequence of cold, it may easily be restored by pursuing proper means; but where the suppression has been of long standing, and leucorrhœa attends, we ought always to consider such circumstances as unfavourable.

In those cases which have terminated fatally, in consequence of the long continuance of the disease, the same morbid changes in the ovaria and uterus are to be observed on dissection as in those of a retention of the menses.

Every attentive practitioner must know, that if there be cases of suppressed or obstructed menstruation where the fluid is tardily secreted, in consequence of local or general debility, there are many others in which an opposite state of the woman's frame becomes the cause of such irregularities. It will, therefore, be highly necessary, in the treatment of these complaints, that the morbid peculiarities, and habits of life of the patient, be taken into consideration; let the first be counteracted, the second be improved; let the sanguine have her excess of fulness diminished, let the debilitated have her powers augmented. In short, let the general health be amended, and the functions dependent thereon will, in all probability, be restored.

Luxurious living, coupled with an inactive life, often induces obstructed menstruation, the supply of food being greater than the wear and tear of the system, thereby producing a plethoric and unhealthy state. Here abstemiousness, with an increase of exercise, is the natural remedy; but should it fail in producing the desired effect, moderate bleedings, with saline purgatives, occasionally, must be resorted to.

The application of cold, and other accidental circumstances, may also occasion an interruption of the menstrual discharge, by exciting fever in the system. In this case, confine the patient to bed, supply her with cooling drinks, open her bowels freely, and if me-

dieine appears really necessary, give her the saline medicine combined with small doses of tartarized antimony. We may at the same time endeavour to remove (if possible) the constriction which affects the extremities of the vessels of the uterus; and this is to be attempted by a use of relaxants externally employed.

As such, bladders filled with warm water may be applied to the region of the pubes and adjacent parts, or warm vapours may be received on them, by making the patient sit on a chamber-pan filled with hot water; and in order that these applications may have the due effect, they should be employed particularly at the time when nature seems to be making some effort to produce the discharge, which may be known by a sense of fulness in the organs of generation, a weight in the back and loins, and slight spasmodic pains in the uterus. Pediluvia will also be proper. The hip-bath, aided by friction and pumping on the loins, will seldom fail in affording great relief.

To increase the relaxing powers of the topical applications, we may at the same time give an opiate in the form of elyster, where there is much pain.

Should poverty of living, close confinement within doors, or breathing an impure air, have injured the patient's general health, and thereby induced debility and an obstruction of the menstrual discharge, then it will be necessary to invigorate the body by every means in our power; the patient should breathe a pure air, take regular and moderate exercise daily, court cheerful society and pleasing amusements, using at the same time a generous diet. The stomach and other digestive organs must be strengthened by bitters—such as an infusion of cascarilla, calumba, gentian, or cinchona—conjoined with some mineral acid, proceeding gradually to the use of more powerful tonics—such as steel.

When the constitutional weakness has been removed by these means, we may then have recourse to stimulants, such as spices, essential oils, ammonia and wine, some of the resinous gums, castor, savin, black hellebore, the secale cornutum, Spanish fly, electricity, and horse exercise. The tinctura cantharidis may be tried, if neither the savin nor hellebore produce the desired effect, beginning at first with ten drops for a dose, and repeated twice a day (increasing it gradually to twenty or thirty), in an infusion of gentian or calumba. Aloes, by stimulating the rectum, and being conjoined with galbanum, is likely to produce a good effect, and may be considered as far preferable to saline or oily purgatives.

Medicines which increase the general action of the system (as those above enumerated are supposed to do) have been denominated emmenagogues, and may be administered in the forms* here recommended.

* R. Tinct. Sabin. Compos. ℥j.

Tinct. Helleb. Nigr. ℥ss.

* Take Compound Tincture of Savin, one ounce.

Tincture of Black Hellebore, half an ounce.

Women subject to, or labouring under, a suppression of the menses, should carefully avoid all exposures to wet and cold, particularly in the feet, which parts ought to be kept not only dry but warm.

Praetitioners should not forget the connexion between a suppression of this secretion and pregnancy.

DYSMENORRHŒA, OR DIFFICULT MENSTRUATION.

BESIDES the two deviations from the usual course of nature already mentioned, there sometimes occurs a third, — viz. where menstruation, although not wholly suppressed, is nevertheless somewhat difficult, and accompanied with severe and distressing pains in the back, loins, and bottom of the belly.

——— Castor. ʒij. M.
Capiat mxxx.—xlvi. ter die ex quovis vehi-
culo.

Vel,
℞ Tinet. Helleb. Nig. f. ʒss.

——— Myrrh. f. ʒj.
Sumat ægra mxx. ter quaterve in die.

Vel,
℞ Tinet. Aloes Comp. f. ʒss.

——— Castor. f. ʒij.
Vini Ferri, f. ʒss. M.
Cochl. minim. j. ter die sumendum.

Vel,
℞ Pulv. Myrrh. Compos. ʒj.
Ferri Ammoniaci, gr. v.
Confect. Cort. Aurant. q. s. M.
ft. Bolus, bis terve in die capiendus.

Vel,
℞ Pilul. Galban. C.
Ferri Sulphat. āā ʒj.

Extract. Sabin. ʒss.
——— Helleb. Nigr. ʒj.

Syrup. Zingib. q. s. M.
ft. Massa, in pilulas xxxvj. distribuenda,
quarum iij. sumat ægra mane et vespere.

Vel,
℞ Ferri Subcarbonat.
Pulv. Myrrh. āā ʒj.

Aloes Spicetæ Extract. ʒij.
Sapon. Venet. ʒss.
Syrup. q. s. M.
Fiant pilul. xxxvj., capiat. iij. bis terve in
die.

——— Castor, two drachms.
Mix them. The dose may be from thirty
to forty-five drops thrice a-day in any
vehicle.

Or,
Take Tincture of Black Hellebore, half
an ounce.

——— Myrrh, one ounce.
Mix them, and let the patient take thirty
drops three or four times a-day.

Or,
Take Compound Tincture of Aloes, half
an ounce.

Tincture of Castor, two drachms.
Wine of Iron, half an ounce.
Mix them. Take a tea-spoonful thrice
a-day.

Or,
Take Compound Powder of Myrrh,
one scruple.

Ammoniated Iron, five grains.
Confection of Orange Peel, a
sufficiency to form a bolus, which is to
be taken twice or thrice a-day.

Or,
Take Compound Galbanum Pill,
Sulphate of Iron, of each one
drachm.

Extract of Savin, half a scruple.
——— Black Hellebore, one
scruple.

Syrup of Ginger, a sufficiency.
Mix them, and form thirty-six pills out of
the mass. Let the patient take three
morning and evening.

Or,
Take Subcarbonate of Iron,
Myrrh, in powder, of each one
drachm.

Socotrine Aloes, two scruples.
Venetian Soap, half a scruple.
Syrup, a sufficiency.

Mix them. Let thirty-six pills be formed
out of the mass, and take three twice or
thrice a-day.

This disease is supposed to be owing to a weak action of the vessels of the uterus, or spasm of its extreme vessels, and is to be obviated by ehalybeates, warm bathing, both topical and general, together with the use of opiates, which should be employed as soon as the symptoms that denote its approach are apparent. The extractum stramonii, given in half-grain doses, will sometimes prove serviceable in cases of painful menstruation, when other nareotics and anodynes fail.

In some cases the disease may be relieved by small local blood-letting, employing aperients if the bowels are at all confined.

Dr. Goode remarked that this disease is occasionally connected with rheumatism: his observations were confirmed by Dr. Locock and Dr. Dewees of America. In such cases great benefit is derived from the usual treatment of rheumatism, and particularly from the use of guaiacum.

CESSATION OF THE MENSES.

THE period of life at which menstruation ceases, which usually happens between the forty-fifth and fiftieth year of life, is always a very critical one to women, as the constitution then undergoes a very considerable change; and it not unfrequently happens that chronic complaints then arise which create much disturbance, and after a time terminate fatally, if not counteracted.

The menses seldom cease all at once, but for some time before their stoppage become somewhat irregular, both as to the periods and the quantity.

When they happen to disappear suddenly in women of a full, plethoric habit, such persons should be careful to confine themselves to a more spare diet than usual; they should likewise take regular exercise, and keep their body open by a use of some mild laxative, — such as the confectio sennæ, — the purgative quality of which may be increased, if not found sufficiently powerful, by adding a small quantity of powdered jalap.

Where the patient is sensible of a seeming fulness of the vessels, with giddiness and occasional pains in the head, small bleedings from the arm, or applying leeches to the temples, may likewise be advisable.

If ulcers break out in the legs or any other part of the body, on a total cessation of the menses, they ought to be regarded as critical discharges, and should by no means be healed up without substituting some other drain by an issue.

Should any scirrhus or cancerous affection of the uterus or mammæ take place on a stoppage of the menstrual flux, as sometimes happens, all that can be done in such a case is to have recourse to palliatives — such as opium, hyoseyamus, and conium, in the manner pointed out in the succeeding diseases.

ORDER VI.

TUMORES.

INCREASED bulk of a part, with little or no inflammation.

SCIRRHUS AND CANCER.

A SCIRRHUS is to be considered as the occult or primary stage of cancer, and is not an unfrequent consequence of inflammation when it has attacked or occupied glands. The part becomes of increased size, is knotty, hard, and irregular to the touch, being, however, unattended with any discoloration of the skin; and acute, lancinating pains are every now and then felt darting through the tumour. At length, a tendency to cancerous ulceration becomes obvious.

A cancer is an ulcer of the very worst kind, with an uneven surface and ragged and painful edges, which spreads in a very rapid manner, discharges a thin, acrimonious matter, that excoriates the neighbouring integuments, and has a very fetid smell, and which is usually preceded by a hard or scirrhus swelling of the part, if glandular.

The disease is most commonly confined to glands, and particularly the testes and mammae; but is nevertheless to be met with in the uterus, as likewise in the face and other parts that are thinly covered with flesh, and which are at the same time a good deal exposed to external irritation, such as the lower lip, the angles of the eyes, the organs of vision, the alæ nasi, tongue, and penis. From a lodgment of soot in the rugæ of the scrotum, chimney-sweepers who have arrived at the age of puberty are very subject to a peculiar cancerous affection in this part, and first noticed by the late Mr. Pott.*

“Malignant tumours generally abound in cell-formations, and in blood vessels; hence, in all probability, their rapid growth and quick disintegration. The cells are commonly infiltrated into a fibrous structure; which is sometimes, however, in a very small quantity, as in the softer varieties of medullary tumour. The cells observed in malignant tumours present not unfrequently a very high degree of development; containing one or more nuclei, of very large size as compared with those of normal cells; and these,

* See his *Chirurgical Works*, p. 734.

again, containing nucleoli. In some cases, even a fourth or fifth generation has been observed, in the interior of the 'parent cells;' the development being supposed to be endogenous, much stress has been laid on these characters, as affording a specific distinction between malignant and simple forms of growth. Lebert, in particular, has described the 'cancer-cell' as quite characteristic and specific. On the other hand, Müller asserts the impossibility of distinguishing the cell-element of cancer, in all cases, from the cells in certain other abnormal or even normal tissues; and Dr. Bennett agrees with him in considering no single element as characteristic of the former. We must, therefore, find the characters of malignant formations in relative or comparative considerations; especially the abundance of their cell-growths, the high development (in some cases) of the cells, and the encroachment of the growth upon the normal elements of the part. In places where few or no cells naturally exist, the profuse generation of these, in a tumour not presenting inflammatory characteristics, will of itself be strong presumptive evidence of cancerous formation: and if these cells present the high type of development above described, the evidence will be complete." A thin viscid juice may usually be expressed from carcinomatous growths, and is considered characteristic of them.

Professor Paget considers that the cells would easily be distinguished by a practised eye, and he lays great stress on irregular arrangement of them: he says "they are heaped together disorderly, and seldom have any lobular or laminar arrangement, such as exists in the natural glands and epithelia, or in the innocent glandular or epithelial or epidermal tumours."*

Cancer is most generally met with in persons advanced in life, and particularly in women about the period when the menses cease. The disease being often met with in unmarried females about this time of life, it has been thought by some that celibacy predisposes to the complaint. Women who have had no children, as likewise those who have had them but not suckled them, are frequently affected with cancer. From several persons of one family having been afflicted with cancer, it seems as if there had been an hereditary predisposition, from some peculiarity of structure, in these instances, to the disease. Climate appears to have some degree of influence in predisposing to cancer: in cold, northerly regions, the disease is not only more frequent than in the southern parts of Europe, but seems likewise to be more intractable in its nature.

It has been observed by many surgeons, that cancerous affections are most prevalent in persons of a serofulous constitution.†

A cancer arises most frequently from some external injury, such

* For further information on this subject the reader is referred to Dr. Walsh's work on the Nature and Treatment of Cancer, Professor Paget's Lectures on Tumours, and to Miller's Elements of Surgery.

† See Howard on Cancer.

as a blow ; but is now and then to be met with as the consequence of previous inflammation excited by other causes.

Irritation during the seirrhous state of a gland, without any wound or breach of the skin, may be propagated to other glands, and these may take on a similar action with the gland first diseased ; but absorption does not take place until the gland becomes ulcerated. When this is the case, the irritation from one gland to another goes on not only more rapidly, but absorption takes place from every part of the diseased surface.

Cancer usually begins with a small swelling in the gland, unaccompanied by pain or any discolouration. It gradually increases both in size and hardness, in process of time is attended with lancinating pains, as if a sharp-pointed instrument was entering the tumour, and with varicose swellings of the subcutaneous veins, together with an uneasy and painful sensation in the neighbouring parts. Sometimes it remains in this indolent and occult or seirrhous state for a length of time, but in other instances it proceeds on to suppuration with great rapidity and forms an ulcer. Its progress will, however, depend much on the state of the person's constitution, and other like causes. It has been supposed that in proportion to the rapidity of the progress of any individual case, so is its degree of malignancy.

During the occult state of cancer, the pains recur at very irregular intervals, and are dependent upon causes concerning which nothing satisfactory is known. If the disease is seated in the breast, and the female of such an age that the catamenia have not altogether disappeared, she will usually suffer a considerable exacerbation of pain in the part about the times of their recurrence. The tumour will likewise undergo most likely a proportionally greater augmentation of bulk than during the same space of time at any other period.

When the tumour begins to form adhesions to the surrounding parts, and the disease is in the breast, it is not uncommon to find one or more of the axillary glands on the same side of the body somewhat enlarged.

As the disease approaches near the surface, the integuments, which had hitherto retained their natural appearance, begin to look puckered, or as if they were drawn together in folds. From this cause, the nipple will be sometimes so retracted and sunk as it were in the surrounding parts, that its existence might be overlooked by a superficial observer.

When the disease has advanced further, the skin becomes inseparably united to the tumour beneath it, and in a little time more it may be observed to have acquired a slight tinge of redness. The other characters of inflammation are also present, though some of them may be in an inconsiderable degree. After a time, the whole surface of the swelling puts on a purple, shining appearance, and in this state it continues with but little change till ulceration is about to take place. From the great exacerbation which usually

happens at this period, a degree of febrile irritation will often be excited in the system at large.

The superineumbent parts at length give way to ulceration, and the patient probably experiences a temporary relief, from the discharge of a small quantity of sanious or ichorous matter. In general it is not until after some time that the ulceration becomes deep and excavated; for, under mild treatment, it has been known to continue superficial for some months. Sooner or later, however, the ulcer assumes the true carcinomatous characters. It penetrates deep towards the more central parts, while at its circumference the edges appear hard and elevated. The surrounding skin puts on a livid aspect, and from the surface of the sore there is a considerable discharge of an irritating, corrosive quality. Matter of a true purulent appearance is hardly ever furnished by carcinomatous ulcers. The odour of the discharge impresses the organ of smell with a peculiar but indescribable sensation.

If the ulceration be extensive, it will be observed that while one part of the sore is undergoing a sloughing process, another will be active in throwing forth luxuriant granulations of a loose and spongy texture. These changes appear sometimes to alternate with each other upon the ulcerated surface, and in their further progression give rise to considerable hæmorrhages from the erosion of the vessels.

From the derangement which is occasioned in the functions of the lungs by the morbid condition of the parts, there gradually comes on dyspnoea, attended by cough and some degree of emaciation, which symptoms are usually followed at no great distance by a fatal termination, and this frequently without any remarkable alteration in the external appearance of the diseased part.

Cancer of the breast is chiefly a disease of middle and advanced life; from forty to fifty years is, perhaps, the most frequent period at which it makes its appearance.

The female organ which is most likely to suffer from cancer, next to that of the breast, is the uterus, and, like the former, it is a disease of comparatively rare occurrence before the period of life at which the catamenia usually disappear. The early symptoms of this complaint somewhat resemble those of polypus and prolapsus uteri: among them may be enumerated a sense of weakness, with pain or uneasiness in the loins, leucorrhœal discharge, and a sense of bearing down. To these may be added weight and fulness in the region of the pelvis, with acute, shooting pains across the cavity, and more or less of derangement in the functions of the chylopoietic viscera. There is also a pain in coitu, and on an examination with the finger, the os uteri is discovered to be partially thickened and indurated, with an increase of size in its aperture. It sometimes happens, however, that the enlargement begins higher up in the cervix uteri, the os uteri remaining closed. In both cases the uterus appears to be situated lower in the vagina than is usual in the healthy unimpregnated state, and when sup-

ported upon the finger, a sensible addition to its weight is to be perceived.

After ulceration has taken place there will be a constant discharge of an offensive sanious matter from the vagina. If an examination be again instituted, the os uteri will be found more open, and with ragged, irregular edges. Pressure upon these parts will now occasion some degree of pain, and a little blood will commonly be observed to come away upon the finger. About this time the vagina undergoes a considerable deviation from its natural structure; it becomes somewhat hard to the feel, and its rugæ cease to be distinguishable. At the superior part it will frequently be affected with carcinomatous ulceration, communicated from the os uteri by the continuity of surface.

As the different functions of the body become more and more disordered, emaciation increases with rapidity. Frequent retching and vomiting, with torpidity or irregularity of the bowels, arise, mental dejection and despondency ensue, and a sort of hectic fever is constantly present. Towards the latter period of the disease, if the ulceration of the vagina becomes extensive, there will frequently be an enlargement of the absorbent glands in the groin, and this sometimes arrives to such a degree as to occasion œdema of the whole lower extremity. It seldom happens that the hæmorrhage from the ulcerated parts is in so violent a degree as to prove fatal of itself.

The progress of scirrhus of the testicle is usually slower than where the disease occurs in other glandular parts, yet it is capable of being more or less accelerated, according to the degree in which the different causes of irritation, whether local or constitutional, are permitted to have influence. The tumour goes on gradually to increase in size, and is attended with nearly the same symptoms and appearances that have been described as appertaining to the cancerous breast. The acute, darting pain is at first confined to the precise site of the swelling, but afterwards extends in the direction of the spermatic chord to the abdomen, and even up the spine and in the loins.

In process of time the shape of the gland becomes totally obscured, and nothing remains to be distinguished but the enlargement, which is remarkable on account of its weight, excessive degree of hardness, and its surface being studded more or less with protuberant inequalities.

When the disease begins to extend, it proceeds from the testicle to the epididymis, and thence by the lymphatic vessels of the chord, till it arrives at the lumbar glands. In this course there is produced great thickening and induration of the different parts through which it passes. An irregular or knotted feeling of the spermatic chord is another and very striking effect of the extension of the disease. Some time after the lumbar glands have been contaminated, derangement in the functions of the various neighbouring viscera is perceptible, and at this time a prominent tumour

may be distinguished through the parietes of the abdomen, consisting of a cluster of these enlarged lymphatic glands. In process of time, cancerous ulceration of the testicle ensues, and in some instances is extended to the serotum.

The cancer with which chimney-sweepers are sometimes attacked generally begins in the rugæ of the scrotum in the form of a wart. This, from the itching and uneasiness it at first occasions, and from the part being frequently rubbed in the act of climbing and descending the chimneys, is often scratched and otherwise irritated: thus, a constant stimulus is applied, in addition to the action of the soot on the part. If the head of the wart is picked or rubbed off, another is soon formed: and at length there is not only a horny crust, but a thickened base beneath, proceeding inwards, until a large fungus or a spreading ulceration is produced, which at length occasions the testicle also to become affected.

Cutaneous cancer is most frequently observed to occupy the lower lip, the angles of the eyes, the alæ nasi and penis. At its commencement it usually appears under the form of a small preternatural enlargement or elevation of the skin. Sometimes it is so hard to the touch and in consistence, as nearly to approach to the nature of horn, while on other occasions it will bear a much nearer resemblance to a common wart. In a few instances it will put on the appearance of a small discoloured pimple.

Under whatever form the disease may first appear, a degree of surrounding hardness will invariably be found to take place. Some degree of shooting pain from time to time is likewise experienced in the part. In many cases ulceration seems to be materially accelerated by the accidental irritation of the patient's fingers, which are often, although unconsciously, applied in the vicinity of the disease. Sometimes, however, a sort of scale is generated, so as to form a covering to the little tumour, and this will be removed, and again be renewed several times in succession, before ulceration is perfectly established.

When the part has once arrived to a state of ulceration, it quickly puts on those characters of malignity which have occasioned it to be classed as a species of cancer. The surface of the sore possesses, indeed, the common appearance of carcinomatous ulceration, and there is a discharge from it of sanious or other ulcerated matter. In cutaneous ulcer it seldom happens that the lymphatic glands begin to enlarge or grow painful till after the diseased part has been in a state of ulceration for a considerable time, which forms a striking point of difference between this disease and that which has its seat in glandular structures.

In a very great number of cases of cancer of the penis, it has been remarked that phymosis had naturally existed; hence it has been inferred by some surgeons that phymosis may generate a predisposition to this affection. A review of the cases published

by the authors referred to*, and in which amputation of the penis was performed, seems to countenance the opinion that cancer of the penis is an affection purely local, and hence less frequently reproduced than cancer of other parts.

Cancer of the tongue, like cutaneous cancer, seems to admit of a certain degree of variability in its appearance, which is, however, most commonly that of a small, hard tumour, situated on the upper surface of the tongue, and at no great distance from its anterior extremity. The tumour usually possesses a firm connexion with the subjacent parts, and, before arriving at a state of ulceration, it is not unusual to see it attain a size equal at least to that of a common hazel-nut.

Another form under which this disease sometimes shows itself at an early period is that of a little discoloured pimple, having a disposition to bleed very freely from the slightest cause; but there is likewise a third case, where carcinomatous ulceration suddenly breaks out upon the tongue, without the part having previously suffered any morbid change of structure, or presented any unnatural appearance sufficient to attract notice.

The pain attendant on the disease in its different stages, though varying in degree, is yet always of that peculiar darting kind which belongs to cancer. When first complained of, it is only slight and partial; but, gradually increasing in severity as the disorder advances, it will in time extend so as to be felt both about the fauces and base of the skull. The disease may continue a long time even in an ulcerated state without the health appearing to suffer very materially from it. The entire destruction of a great portion of the tongue will sometimes be produced by cancerous ulceration, before death takes place in consequence of the disease.

Cancer of the tongue is more frequently met with in those who are pretty far advanced in years than in subjects under the age of puberty.

Scirrhus tumours are often removed with perfect safety, and thereby prevented from degenerating into true cancers, when extirpation is not delayed too long; but after a tumour of this description has ulcerated, thereby assuming the carcinomatous character, and has afforded an opportunity for an absorption of the matter into the system, there is every reason to suppose that a complete cure can seldom, if ever, be effected; for although we remove the diseased part, still the virus will be likely, sooner or later, to show itself in some other glandular place. Under such circumstances, extirpation will therefore, in all probability, be attended with no lasting advantage.

Sir Everard Home* has observed, that with respect to the internal structure and appearance of the breast affected with a

* See Practical Observations in Surgery, by Mr. Hey; and Parallel of French and English Surgery, by Mons. Roux.

* See his Observations on Cancer; and Mr. Fearon's Treatise on this Disease.

scirrhus, if a section is made of such a tumour in an early stage, where the structure is seen to advantage, it puts on the following appearances: — The centre is the most compact, harder to the feel, has a more uniform texture than the rest of the tumour, and is usually of the consistence of cartilage. This middle part does not exceed the size of a silver penny, and from this in every direction, like rays, are seen ligamentous bands of a white colour, and very narrow, looking in the section like so many irregular lines passing to the circumference of the tumour, which is blended with the substance of the surrounding gland. In the interstices between these bands the substance is different, and becomes less compact towards the outer edge. On a more minute examination, transverse ligamentous bands of a fainter appearance form a kind of net-work, in the meshes of which the new-formed substance is enclosed.

In a further advanced stage of the tumour, the whole of the diseased parts has a more uniform structure: no central point can be distinguished, the external edge is more defined and distinct from the surrounding gland, and the ligamentous bands in different directions are very apparent, but do not follow any course that can be traced.

No regular distinction of structure can be made in parts affected with carcinomatous ulceration. In the centre, however, is a small irregular cavity filled with a bloody fluid, the edges of which are ulcerated, jagged, and spongy.

When any gland has become enlarged, indurated, and shows a tendency to scirrhus, we should, from the earliest period, use our utmost exertions to discuss it if possible, or at least to prevent its further increase. Applications of a discutient and sedative nature should be had recourse to without delay; pressure of any kind should be guarded against, particularly from the stays, if the breast is the part affected; the bowels must be kept free and open by gentle purgatives administered from time to time, and a cooling regimen be enjoined, cautioning the patient to abstain from all vinous and spirituous liquors, and from other stimuli of every kind.

It will at the same time be necessary to draw blood from the vicinity of the diseased gland or glands by means of leeches. They should never be applied to the skin immediately covering the tumour, for ulceration has been known to have been greatly accelerated when leeches have been suffered to draw blood from the surface of an inflamed scirrhus or cancer. By being applied in the neighbourhood every good purpose will be secured, and the danger of exciting a comparatively dormant disease be avoided.

After the application of leeches twice or thrice, it would appear advisable to put the patient under a course of iodine, administered both internally and applied externally over the tumour, as recommended under the heads of Bronchocele and Scrofula, in which diseases the power of this medicine in reducing morbid growths in

glands has had a wonderful effect. During the use of iodine, it will be proper to give a mercurial purgative (say two grains of calomel in a pill), to be taken at bed-time, and carried off in the morning by an infusion of senna, with about two draehms of the sulphate of magnesia dissolved in it. Should headach, nausea, giddiness, languor, or inaptitude for exertion, ensue from using the medicine, the dose must be lessened from fifteen or twenty drops to ten.

In the incipient stage of seirrhus, and in addition to the means just recited, blisters have sometimes been applied with the view of promoting a considerable serous discharge from the neighbourhood of the part. In a posthumous work* of the late Mr. John Howard, and published by Dr. Gower, we are informed that the author was strongly of opinion that much may be done in all incipient seirrhus tumours by repeatedly blistering the part, having, however, premised the frequent application of leeches, the use of discutient and sedative applications, with occasional purgatives and a cooling diet.

If blistering is ever thought of, this circumstance ought to be cautiously kept in view, viz. the skin which covers the tumour should be in an uninfamed state, and not have taken on the shining purplish hue of cancer, the excoriation being likely to heal kindly. If applied when the skin is in an irritable and inflamed state, it might tend to ulcerate the part, and prematurely bring on cancerous mischief, as happened in a case of seirrhus mamma which lately came under my inspection. The blister was applied by an ignorant pretender to a knowledge of curing such diseases; ulceration ensued and spread most rapidly, whereby the unfortunate woman was soon destroyed.

Immersion of the body in a warm bath, by directing the circulation to the surface of the body, and increasing both the sensible and insensible perspiration from the cutaneous glands and pores, might perhaps be employed with some advantage in seirrhus tumours.

To allay pain and irritation, and probably thereby retard the progress of the disease, we may employ opium, which we may give internally, and likewise apply externally, mixed with the different preparations of lead that we use as sedatives and discutients.†

* See Mr. Howard's *Practical Observations on Cancer*.

† ℞ Liquor. Ammon. Acet. f. ℥j.

———— Plumb. Subacet. mxx.

Aq. Puræ, f. ℥ij.

Tinct. Opii, f. ℥jss. M.

ft. Lotio.

† Take Solution of Acetate of Ammonia
one ounce.

———— Subacetate of Lead,
thirty drops.

Pure Water, two ounces.

Tincture of Opium, one draehm
and a half.

Mix them for a lotion.

If the means which have been pointed out are not, after a fair trial, attended with the benefit and relief that were wished for, we may then recommend a slight course of mercurial unction, either immediately over or in the neighbourhood of the diseased gland, together with small doses of the hydrargyri ehloridum internally, joined with antimony. In the early stage of the disease, a slight course of mercury, conformable to the plan just mentioned, and assisted by a decoction of vegetable substances which possess a diaphoretic effect, such as guaiacum, sassafras, sarsaparilla, and mezereon, of which the decoctum sarsaparillæ compositum is composed, has in some instances been attended with a good effect.

With regard to the use of mercury in scirrhus tumours, it is necessary however to mention that, when either given internally or used externally, it can only be of service in the first or early stage of the disease, when simple obstruction, and not altered organisation, has taken place. By its tendency to hasten ulceration (a natural consequence of its action), it will be likely to prove highly prejudicial in all cases which are verging on cancer.

Hemlock is a medicine which, since the days of Stork, has been much employed in every stage of cancer, and there is reason to suppose sometimes with advantage. To derive this with the greater certainty, however, we should make use of it during the occult or scirrhus state, and before ulceration has commenced. In administering hemlock we ought always to begin with a small dose, and so augment it gradually till the patient experiences some little inconvenient effects on the head and stomach, such as nausea and vertigo, when the quantity is to be lessened, or the medicine wholly be desisted from for a short time. The extract is the most active preparation, and this may be given in pills of two grains each, in the number of from one to ten or twelve in the twenty-four hours.

Belladonna and hyoseyamus are medicines of the same class with conium, and the timely use of these has sometimes proved advantageous in glandular tumours and indurations that are likely to become cancerous.

Where no advantage seems to be derived from any of the means

<p style="text-align: center;"><i>Vel,</i></p> <p>℞ Spirit. Camphoræ, f. ʒss. Acidi Acetici Dilut. f. ʒj. Liquor. Plumb. Subacet. f. ʒj.</p> <p style="text-align: center;">Tinct. Opii. f. ʒij. M.</p> <p style="text-align: center;"><i>Vel,</i></p> <p>℞ Cerat. Plumb. Acet. ʒj.</p> <p style="text-align: center;">Opii in pulv. trit. ʒss. M.</p> <p>t. Unguentum.</p> <p style="text-align: center;"><i>Vel,</i></p> <p>℞ Empl. Plumbi.</p>	<p style="text-align: center;"><i>Or,</i></p> <p>Take Camphorated Spirit, half an oz. Distilled Vinegar, one ounce. Solution of Subacetate of Lead, one drachm. Tincture of Opium, two drachms.</p> <p style="text-align: center;"><i>Or,</i></p> <p>Take Cerate of Acetate of Lead, one ounce. Opium, rubbed into a powder, half a drachm.</p> <p>Mix them into the form of an ointment.</p> <p style="text-align: center;"><i>Or,</i></p> <p>Take a Plaster of the Oxide of Lead, and apply it to the tumour.</p>
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which have been advised, but, on the contrary, the tumour is proceeding hastily on to ulceration, the only effectual remedy then left is the complete removal with the knife, not solely of the indurated part, but of the whole glandular substance of the breast, so as to secure against a relapse; and this we should not fail to enforce most strenuously to the patient, provided the tumour is movable and not attached to bony parts, and its local situation does not render the operation improper. If there be one or more enlarged lymphatic glands in the direction of the axilla, these are also to be cautiously removed.

The causes of the failure of operations for the removal of scirrhi proceed either from the constitution having been already involved in those diseased actions which were local in their origin, or from the diseased parts not having been perfectly and entirely removed by the surgeon. All carcinomatous tumours ought, therefore, to be removed at an early stage, when the usual remedies fail in arresting the disease; and in performing the operation, the surgeon should not be contented merely to dissect away the diseased part from its neighbouring connexions; but a portion even of these should be cut away, so as to secure the patient against a recurrence of the disease.

To destroy the living powers of the morbid growth in scirrhus tumours, and to effect its consequent separation from the sound parts which are immediately adjacent, caustic applications, and particularly those composed of arsenic, have been much employed by itinerants and quacks; but when we seriously reflect on the danger and uncertainty which necessarily attend their operation, they must be held cheap in the estimation of the profession, and a decided preference be given to the knife.

As the female breasts are liable to enlargements and indurations from external injuries, exposures to cold during a puerperal state, and such other causes as by inattention might possibly be mistaken for a scirrhus, it will certainly be necessary in all doubtful cases to scrutinize minutely into the rise of the tumour, the symptoms and appearances with which it is attended, and the progress that it has made, in order that we may ascertain the real existence of the disease in question, previous to our having recourse to an operation.

Where this has been neglected in real scirrhus, and the inflammation has proceeded on to suppuration and ulceration, we are then to endeavour to correct the fœtor and aerimony of the discharge, to defend the adjacent parts from its effects, and to quiet the pain and lessen the irritability of the sore.

The first of these intentions is to be answered by washing the ulcer with solution of chlorinated lime or soda, and then applying a carrot poultice, or one composed of an infusion of malt, oatmeal, and yeast, as directed under the head of Gangrene. The cataplasma carbonis (which is composed of about half a pound of the common bread poultice, with two ounces of wood charcoal in very

fine powder) is another application which has likewise been found highly useful in sweetening fetid ulcers, and obtunding the acrimony, and may, perhaps, be preferable to the fermenting cataplasm, as this, by lying on the part some hours, becomes more offensive than the smell it was intended to correct.

The charecoal should be taken fresh from the fire, and powdered very fine as soon as cool; when it is immediately to be put into a bottle and corked, in order that it may not be exposed to the air.

The application of carbonic acid gas, or air in its elastic state, has been much used in the ulcerated stage of the disease, and often with a seeming happy effect, as we are informed by Dr. Ewart*, of Bath, who employed it agreeably to the following process: —

The neck of a bladder was cut off, so as to make a circular aperture in it, of such dimensions as to correspond nearly with the size of the ulcer in the breast. A round hole of the same size was cut in a piece of soft leather, spread with adhesive plaster, and large enough to surround the ulcer: the cut end of the bladder was introduced through the hole in the leather, and its edges folded back, and stuck to the plaster on the opposite side, forming somewhat of the shape of a round hat, the plaster resembling the rim, and the bladder, when distended, the crown. In order more effectually to cement the adhesion of the bladder to the plaster, and to make it air-tight, narrow circular strips of plaster were applied round their juncture both inside and without. The large plaster was then fixed on the mamma, the aperture in its centre, with the bladder attached to it, being placed exactly over the ulcer, no part of which was touched by the plaster. A small orifice was made at the fundus of the bladder, sufficient to admit a tube of about a quarter of an inch diameter, which communicated with the top of an inverted cylinder, suspended upon water,* which cylinder was filled with carbonic acid gas. The bladder being closely squeezed, to expel from it the atmospherie air it contained, and the above-mentioned tube being inserted into the orifice formed to receive it, and tied by a ligature passed over the bladder, the inverted cylinder was pressed down in the water, so that the carbonic acid air was made to rush through the tube and distend the bladder; the tube being then withdrawn, the orifice of the fundus of the bladder was tied, to prevent the escape of the carbonic acid air, which was thereby kept in contact with the ulcer. As often as the bladder collapsed, so as to show that much of this air had got out, it was filled in the same manner as before; and this operation was repeated sometimes twice, sometimes three times a-day, according as it appeared necessary.

The second indication, of defending the adjacent parts from

* See his History of two Cases of ulcerated Cancer of the Mamma, one of which has been cured, the other much relieved, by a New Method of applying Carbonic Acid Gas.

being acted upon by the acrimony of the discharge, is to be effected by the strictest attention to cleanliness, and by dressing or covering them with mild ecrites, composed of calamine, or the acetate of lead: and

The third indication, of quieting the pain, and lessening the irritability of the sores, is to be answered by fomenting it with a decoction of poppies, and then applying a cataplasm of hemlock, as likewise by an internal use of opium or hyoseyamus at the same time.

If the part affected will admit of it, the tumour should be suspended, so as to keep it as easy as possible night and day. It should be kept neither too warm nor too cold, as both extremes would be injurious.

Henbane, nightshade, and others of the narcotic class, have also been employed in external applications as well as hemlock. When used in this way, the leaves may be boiled in milk, so as to form a decoction sufficiently strong, and with this the part must be frequently fomented. The gastric liquor of graminivorous animals applied to putrid and cancerous ulcers, has sometimes been attended with benefit.

As a topical application in external cancer, such as of the lip, mamma, &c., lint dipped in a solution of the bi-borate of soda*, and applied to the ulcerated surface, renewing it as often as it becomes dry, has not unfrequently been attended with a good effect, occasioning the discharge to assume a comparatively healthy and purulent appearance, the size of the ulcer to be much reduced in a short time, and the pain to be rendered trifling.

Applications of a caustic nature have been much used in the ulcerated stage of cancer, and they have been employed under a variety of forms; but their principal ingredients are well known to be either arsenic or the bichloride of mercury. The most noted are, the Arundel powder, Guy's powder, and Plunket's powder†, the last of which is a composition of crowsfoot, dog's fennel, and arsenic. It is prepared and applied as follows:—the crowsfoot and dog's fennel being fresh gathered and bruised, the other ingredients are to be added, and the whole beaten into a paste. This is to be formed into balls, and dried in the sun. When used, they are to be powdered, mixed with the yolk of an egg, and applied, on a piece of pig's bladder to the surface of the cancer. In this state the caustic is to remain, till the eschar separates spontaneously. When this remedy is used in cancers of the nose or

* R Sodæ Bi-boratis, ʒij.
Extract. Hyoseyam. ʒij.
Aq. Distillat. tepid. ʒviij. M.

† R Ranunculi Acris Fol.
Flammulæ Vulg. Fol. āā ʒj.
Arsenic. Alb. Lavigat. ʒj.
Sulphuris Loti, ʒv. M.

* Take Bi-borate of Soda, three drachms.
Extract of Henbane, two drachms.
Distilled Water made warm, eight ounces.

† Take Meadow Crowsfoot,
Dog's Fennel, of each one ounce.
Arsenic, one drachm.
Washed Sulphur, five scruples.
Mix them.

lips, the greatest circumspection will be necessary, lest a portion of the arsenic should be swallowed.

A caustic composed of one ounce of powdered antimony and half an ounce of powdered arsenic, fluxed together in a crucible, and afterwards reduced to powder, was very extensively used by the late Mr. Justamond in his treatment of cancers, and often with a most happy effect. By an addition of powdered opium, this remedy may be reduced to any degree of mildness. Equal parts of white arsenic and sulphur form a caustic application that is very powerful.

The paste arsenicale is a favourite application of many of the most eminent French surgeons in cancerous affections*. This is composed of seventy parts of cinnabar, twenty-two of sanguis draconis, and eight of the oxide of arsenic, which are made into a powder, and formed into a paste with saliva at the time of applying it.

A good method of using arsenic is by mixing about two or three grains of it with a drachm of pulvis calaminæ, and strewing a little of the powder on the cancer every day till the whole is destroyed and sloughs off.

Whenever caustic is applied, it will be necessary to give considerable doses of opium to allay the irritation and pain it occasions; and we should also use anodyne fomentations, composed of a decoction of bruised poppy heads.

Arsenic seems to possess in cancer powers which are peculiar and distinct from those of other caustics. If applied to the sound skin it will not affect it; but if this is abraded, it will produce an eschar to a certain degree, but it will be superficial. When continued for any length of time, the eschar will not be increased, yet the parts beneath the eschar will be found sloughed to a degree and extent proportionable to the strength in which the mineral has been applied: in short, to accomplish this end by the application of arsenic, it is not necessary that it should be in contact with the whole of the part it is intended to destroy.

Arsenic, besides being applied externally in cancers, has likewise been administered internally, and sometimes with a seeming good effect. Where the practitioner is desirous of making a trial of it, he can give it in a solution, as mentioned under the head of Intermittent Fever. A poultice made with crumb of bread, and moistened with some of this solution, diluted to the proportion of one grain of arsenic to a quart, might probably prove a very good external application, as well as the former which have been noticed.

A saturated solution of chloride of barytes, in doses of from three or four to ten or twelve drops twice a-day, in any convenient vehicle, has been recommended by Dr. Crawford in cancerous and

* See Sketches of the Medical Schools of Paris, by Mr. J. Cross, p. 45.

scrofulous affections. In the early stage of cancer, it seems to have been frequently used with some advantage, but never its last stage.

Some cases of cancer were published a little time back by Mr. Carmichael,* wherein he had employed different preparations of iron with some success, and which, under a failure of other means, may therefore be tried. For internal use he is inclined to prefer the per-phosphate of iron to the carbonate, which, like all the other salts of this mineral, answers best when given in small doses, and frequently repeated; and he thinks the best manner to exhibit this preparation, is to blend it with white of egg, and to add a small portion of pure fixed alkali, which will render the iron more soluble in the stomach, afterwards forming the whole into pills with a little powdered liquorice. When the carbonate of iron is employed, it may be given in doses of five grains, repeated every four or five hours. After trying a variety of cathartics for the purpose of obviating the costiveness which a course of ferruginous medicines is apt to occasion, Mr. Carmichael discovered that aloes answered the best; and, moreover, that this cathartic, in combination with iron, has a far greater effect than if given in a more considerable quantity alone. He experienced that half a grain of aloes, combined with four grains of the carbonate of iron, in the form of a pill, and taken three times a-day, was perfectly sufficient to keep the bowels free and open.

The preparations of iron which Mr. Carmichael had used externally in ulcerated cancers, are the carbonate, the phosphate, per-phosphate, acetate, and arseniate. He says, that the best mode of applying these preparations of iron possibly may be to blend them with water to the consistence of a thin paste, with which the surface of the ulcer should be covered, and the application in general be renewed in twenty-four hours. In occult cancers, he has used a solution of the sulphate of iron as an external application, and commonly in the proportion of an ounce of the salt to a pint of water; he prefers, however, the acetate of iron diluted with eight or ten times its weight of water. These embrocations are applied by means of folded linen, over which a piece of oiled silk should be placed to prevent the fluid from injuring the clothes. From the use of arseniate of iron, Mr. Carmichael has also found considerable advantage. It has, indeed, been doubted, by some practitioners of eminence, if the cases reported by Mr. Carmichael, in which the preparations of iron have been successful, were truly cancerous.

We are told, however, by Dr. Denman†, that there is scarcely a class of medicines in the *Materia Medica* with some of which he has not made repeated trials in all the different stages of cancer,

* See his *Essay on the Effects of Sub-carbonate and other Preparations of Iron upon Cancer*.

† See *Observations on the Cure of Cancer*, p. 77.

but the benefits derived from the use of any of them have been very little indeed, if compared with those obtained by the use of preparations of iron; and generally, that all other medicines have been wholly unavailing.

The common effects of iron, when used in cases of ulcerated cancer, are a speedy mitigation of pain, an amendment in the appearance of the sore, and the correction of the fœtor, with a diminution in the quantity of discharge. Even in hopeless cases it renders the progress of the malady less horrible and distressing, we are told, than when it is treated in any other manner.

Carcinomatous ulcers of the tongue have been successfully treated by a course of the nitric acid. A case of this nature, where the ulceration was of considerable magnitude, is reported in No. cxli. of the London Medical Journal, which, after having resisted various remedies, was completely cured by nitric acid.* An opiate was given at night, and to prevent the acid from corroding the teeth, it was directed to be sucked through a tube. In fourteen days after the exhibition of this medicine, healthy granulations were perceived to shoot out at the bottom of the ulcer, which gradually healed from this time; and in the course of three months, although half the tongue had been in a state of ulceration, it was perfectly healed. Nothing was applied to the diseased part but a lotion composed of *extractum conii*, *spt. rectificatus*, et *aqua pura*, to which little or no efficacy was ascribed.

In cancerous ulcers of the face the expressed juice of the *Carduus tomentosus* Linn. (the woody-headed thistle or friar's crown) has been employed with much advantage by the Continental physicians, and particularly by Dr. Handel. He ordered his patients to anoint the parts affected with the fresh juice six or eight times every day, and he found that in the course of a fortnight it checked the progress of a most malignant cancer of the face; but it produced no relief whatever where the female breast was affected with that loathsome disease.

Cancer of the womb is not an uncommon disease, more especially at the middle and more advanced periods of life, and it rarely happens that medicine produces any real amendment of it. Opium, hyoscyamus, and such like sedatives, administered internally, the frequent use of a hip-bath, and injecting up the vagina a tepid decoction of bruised poppy-seeds, in which has been dissolved ten or twelve grains of the extract of conium, will tend to relieve the severe attacks of pain, and thereby prevent, in all probability, the constitution from being so soon worn down by the disease. In cases of diseased uterus, accompanied by an offensive

* R₃ Aq. Nitric. Dilut. f. ʒj.
Mellis, f. ʒij.
Aq. Puræ, Oij. M.
Capiat cochlear. iij. sæpe in die.

* Take Diluted Nitric Acid one ounce.
Honey, two ounces.
Pure Water, two pints.
Mix them. Three table-spoonful are to be taken frequently throughout the day.

discharge, solution of chlorinated soda used as an injection, will prove highly useful, and contribute greatly to the patient's comfort; but it must be much diluted, such as perhaps with thirty times its weight of water at first, rendering it afterwards stronger, according as the woman becomes able to bear it.

The diet should always be very temperate, consisting chiefly of vegetable substances, and the patient should abstain from wine and other fermented and distilled liquors. Proper attention must be paid to the bowels, and not suffering them to be confined at any period.

In the cancer scroti, to which chimney-sweepers are peculiarly subject, extirpation bids fair for effecting a complete cure, if done before the virus has seized the testicle, and the habit is tainted. A case of this nature some time ago came under my care, in which the diseased part was removed by ligatures; the patient having been, some months before his application to me, discharged from the Winchester Hospital, for refusing to submit to an extirpation of the part with a knife, to which, undoubtedly, a decided preference was due. The cure, however, proved as complete a one as I ever witnessed, although the case was somewhat deplorable, the patient being far advanced in life, and much emaciated by disease, pain, and poverty.

In every species of open cancer, the air should be excluded as much as possible; a covering of double oiled silk may therefore be applied over the dressings.

A new process, by mechanical pressure, has lately been suggested, and indeed practised with some success, for the cure of scirrhus and cancer, by Mr. Samuel Young*, and the means employed by him to effect the pressure have been plaster straps, sheet lead forming shields of various thickness, tin plates, linen compresses, and the use of appropriate rollers. The strength of the application is to be progressive, commencing in most cases with the use of straps only, in some by single, and in others by double layers; the force of their application controlled by the existing circumstances, and the sensations of the patient. Scirrhus of the breast may be specifically compressed by the use of the pressure plates, and the adjustment of the linen compress, including at the same time a general pressure of the whole. In cases of open cancer the wound is to be filled with powdered chalk, and the surface well dusted with hair-powder, after which the pressure is to be applied as in the case of scirrhus. Irritable parts should be defended by some gold-beaters' skin. The best composition for the straps was found by Mr. Young in equal parts of common strengthening and soap plasters, mixed and spread somewhat thinly on linen.

The plaster should be uniformly smooth; and in the application of the straps, which ought to be long and commanding, it is of the

* See Cases of Cancer and Cancerous Tendency successfully treated by Mr. Samuel Young, Surgeon.

first importance that all wrinkles should be avoided, and that an equal surface of resistance should be given. In the direction of specific pressure on the diseased part, all sorts of partial stricture ought to be avoided.

The effects produced by Mr. Young's plan of treatment are certified by some other practitioners who have been eye-witnesses to it, that there is a very rapid stop put to the ravages of the disease, whether in a state of scirrhusity or ulceration; the discharges are gradually lessened, and, from being of a most acrimonious kind, become bland and salutary. Besides, there is evidently a gradual decrease of the tumefaction and induration, and the whole not only assumes an appearance of amendment, but a promise of recovery. These are, indeed, very great advantages.

In a case which lately occurred at the Middlesex Hospital, Mr. Young's plan of treatment was adopted, and was found to have exceeded the expectations of the most sanguine. Further experience has not, however, sanctioned it.

FUNGUS HÆMATODES, MEDULLARY SARCOMA, SOFT CANCER, OR ENCEPHALOID.

A DISEASE has of late attracted the attention of some surgeons, and has been pretty generally classed and treated as a cancerous affection, in whatever parts of the body it may have been known to occur; but although in its history it has some analogy to cancer, still its symptoms and appearances on dissection are so different from those of cancer, that it cannot, I think, with propriety be considered as a disease arising from the same morbid alteration of structure. By some writers* it has been named the fungus hæmatodes; by others†, the medullary sarcoma; and others, again, have given it the appellation of spongoid inflammation. Mr. Burns‡, who has adopted the latter name, mentions it as appearing only in the superior and inferior extremities; but this probably from his not having met with any other cases of it; whereas the other writers describe it as occurring likewise in the ball of the eye, testicle, liver, lungs, uterus, female breasts, and other parts.

A great difference of opinion seems to exist between the English and French pathologists respecting the precise application of fungus hæmatodes. Mr. Roux asserts§, that most of the cases pointed out to him, when in London, as specimens of this affection, were merely a variety of carcinoma, the soft, fungous cancer, not preceded, like the more common form, by a state of scirrhus. He

* See Practical Observations on Surgery, by Mr. Hey, of Leeds, 1803; and General Observations on Fungus Hæmatodes, by Mr. J. Wardrop, of Edinburgh.

† See Surgical Observations, 1804, by Mr. Abernethy.

‡ See his Dissertation on Inflammation.

§ See his Parallel of French and English Surgery.

denies the existence of what we call fungus hæmatodes as a specific or peculiar malady.

When ulceration has taken place, neither of them discharge a purulent matter, but a thin, fetid ichor; and occasionally they bleed profusely. They both sometimes assume a fungous appearance, and during their progress contaminate the absorbent glands which are in the course of circulation: they are also equally destructive, communicating the disease to the neighbouring parts, whatever the nature of these may be, whether cellular membrane, skin, muscle, periosteum, or bone.

Fungus hæmatodes is generally a disease of early life; whereas cancer is usually confined to those who are in advanced years. Cancer, moreover, seems to be confined to a very few organs of the body, and to a few textures; whereas fungus hæmatodes has been detected in parts where no true scirrhus structure has been ever met with.

On dissection, fungus hæmatodes presents a very different series of phenomena from the scirrhus tumour. When it appears on the external parts of the body, and has not yet acquired a considerable bulk, instead of being hard and unyielding, it is soft and elastic, and has a tolerably equal surface. In place of the hard, fibrous-looking substance (the principal component part of scirrhus tumours), the morbid growth in fungus hæmatodes consists of a soft, pulpy matter, which mixes readily with water, and is somewhat hardened by acids, and by being boiled in water. It has been compared to medullary matter in consistence and colour. When the skin or covering of fungus hæmatodes has been eroded in the progress of the disease, instead of the morbid growth being destroyed by ulceration, a fungus arises from it, and the tumour seems to increase more rapidly in bulk. If the fungus hæmatodes is not interrupted in its progress, both the original tumour, and the fungous mass growing from it, attain a considerable size, and the fungus, which is of a dark red or purple-coloured mass, of an irregular shape, and of a soft texture, is easily torn, and bleeds profusely when slightly pressed or otherwise injured.

Where the fungus has a narrow pedicle, and we are enabled to apply a ligature with tolerable ease, possibly it may be most advisable to resort to in the first instance, taking care to make it only of such a tightness as not to cut the vessels, but merely impede their circulation. When the fungus, with the surrounding ligature, falls off, should any slight hæmorrhage ensue, a saturated tincture of galls, or some other styptic, may be employed to suppress it. Should the surface show any disposition to renew the fungus, the part may be sprinkled with arsenic combined with opium, as before mentioned; which application may be renewed a second time after the slough is thrown off, if requisite.

BRONCHOCELE.

BRONCHOCELE, or goître, is the name applied to certain enlargements of the thyroid gland, which may affect the whole or only a part of that organ; the source of this morbid increase presenting several varieties in its intimate nature, but never being of a malignant character. Tumours of this kind are, for the most part, easily recognised by their form and position, and they are distinguished from aneurismal swellings, and from those produced by tumid lymphatic glands, by their rising and falling in the act of deglutition with the movements of the thyroid cartilage to which they are attached.

We derive from the translation of Dr. Hasse's work on the Diseases of the Organs of Respiration and Circulation a brief outline of the different forms of this disease. Several species of it, he tells us (at p. 385.), have been enumerated; three, however, seem adequate to the purposes of practical surgery, namely, vascular or, as it is sometimes called, aneurismal bronchocele, lymphatic bronchocele, and encysted bronchocele. His description, however, includes a fourth form also, hypertrophy of the thyroid gland, not reckoned in this enumeration, but which we follow him in sketching with the rest.

Hypertrophy of the thyroid gland is a simple enlargement of the organ, without appreciable change of texture. This variety is common, and, for the most part, the size of the tumour is inconsiderable, but it implicates the whole glands, is almost wholly confined to youth, and is frequent about the age of puberty in both sexes, more so, however, in the female. Alternations of increase and decrease are especially apparent in this kind, enlargement being most conspicuous at the approach of the menstrual period. In rare instances it is congenital, and may then, or subsequently, impede respiration, and even cause death by suffocation, of which an example has occurred in our own practice; in the case of an adult in whom the trachea was compressed by the posterior enlargement of the left lateral lobe.

Lymphatic bronchocele, or melicerous degeneration of the gland, is one of the most frequent forms, occurring at all ages, and affecting the whole or a part of the organ. In the former case the component granules are found unusually and unequally enlarged, and transformed into separate cells filled with a tenacious, viscous, jelly-like substance of the colour of honey. The entire gland is hard, nearly bloodless, and but loosely coherent with the surrounding parts. When, as frequently happens, only certain portions are disorganized, these form spherical tumours, varying in size, and imbedded cleanly in the healthy structure. They present a brownish or yellow colour, and the consistency of jelly or of melted glue. Sometimes they appear as an opaque reddish, soft, or even lardaceous swelling. In general but few blood vessels are visible in this goître, but it may be associated with exuberant vascular growth.

Vascular bronchocoele is of much larger size. All the blood vessels are enlarged, the veins in particular forming very dense, capacious, often knotted plexuses, and the whole texture consisting apparently of a dense coil of vessels. The substance of the gland has almost lost its granular character; it is flabby and dark red. After death the tumour collapses considerably, the dilated vessels contain clots, and capacious cavities are found filled with black coagulated blood. This variety affects the whole gland, principally, however, one or other lobe. It is most frequent in females after the prime of life, and, like hypertrophy, undergoes periodical augmentation and decrease.

Eneysted bronchocoele is one of the most frequent forms of this malady. The cystic formation occurs either alone or in conjunction with other kinds of degeneration, and produces the largest and most unsightly of all tumours. An entire lobe, or the greater part of the whole organ, is sometimes engaged in this cystic development. The surrounding texture is seldom healthy, being generally compressed, flabby, and bloodless. The neighbouring organs are much embarrassed by the attachment and pressure of the cyst. The cysts are, for the most part, isolated; occasionally, however, they abut one upon another, so as to form a multilocular cavity. Here, as elsewhere, they are composed of an external filamentous and inner serous membrane; the former, in many instances, is partially, if not wholly, ossified. The sac contains a limpid fluid, or a number of secondary hydatids, or, again, a jelly-like substance, but more commonly a whitish or yellowish crystalline pulp, consisting almost wholly of cholesterine crystals with phosphate and carbonate of lime. Sometimes the cyst accidentally inflames and becomes atrophied, at others it gradually fills with earthy matter, and is transformed into a hard calcareous nodule. Cysts occur in the thyroid gland in both sexes, and nearly at all ages; more frequently, however, in females after the prime of life. (Hasse, translated by Swayne, pp. 385, 386, 387, 388.)

Scattered and insulated examples of the disease are everywhere to be met with, but it is chiefly interesting as an endemic malady affecting the inhabitants of certain mountainous districts, more especially in various quarters of the globe.

Among the inhabitants of the Alps, and other mountainous countries bordering thereon, the Valais, the Valtelline, at Lucerne, Berne, Fribourg, in some parts of Piedmont, in the valleys of Savoy, and at Milan, it is a disease which is very often met with, and is there known by the name of *goître*. It is also a common complaint in some of the American States, particularly in New York, Vermont, and Pennsylvania. In India it is very prevalent in the district of Kemaon, bordering on the Himalayan mountains, and also in the province of Nepaul. In England, it is so common in Derbyshire as to be known by the name of the Derbyshire neck; but its occurrence is by no means frequent in other parts of Great Britain or in Ireland.

Dr. Saunders observes*, that snow-water has long lain under the imputation of occasioning those strumous swellings in the neck which deform the inhabitants of many of the Alpine valleys; but that this opinion is not supported by any well-authenticated, indisputable facts, and is rendered still more improbable, if not entirely overturned, by the frequency of the disease in Sumatra, where ice and snow are never seen; and its being quite unknown at Chili and in Thibet, though the rivers in these countries are chiefly supplied by the melting of the snow with which the mountains are always covered.

A modern writer† mentions, that in Java, as well as in Sumatra, there are certain mountainous districts in which the people are subject to those large wens in the throat termed in Europe *goîtres*; and the cause assigned by the natives is the quality of the water, but that there seems good ground for concluding that it is rather to be attributed to the atmosphere. In proof of this he tells us, that there is a village near the foot of the *Teng'gar* mountains, in the eastern part of the island, where every family is afflicted by this malady; while in another village, situated at a greater elevation, and through which the stream descends which serves for the use of both, there exists no such deformity. He also mentions, that these wens are considered as hereditary in some families, and thus seem independent of situation.

A predisposition to bronchocele is, I think, often entailed by parents upon their children, as well as that glandular affection known by the name of *scrofula*: which fact is corroborated by the strongest evidence, as I know a family consisting of seven, all of whom were attacked with it before they arrived at the age of puberty; the father having been afflicted with it at an early period in life. This family resided at *Cron dall*, in Hampshire, and were the only persons in the place who laboured under it. The predisposition to the disease must therefore have been entailed on the children by the parent.

In those situations in the vicinity of mountains where the disease is found to be endemial, it has been attributed by some to a peculiarity, or humidity in the air; and it has, indeed, been found more generally prevalent among the lower class of people, and those who are most exposed to the unguarded influence of the weather, and various changes that take place in the air of such situations.

We have mentioned above that in Sumatra an impression prevailed that the production of *goître* is due to some particular impregnation, probably saline or calcareous, of the water in common use; and so common is this opinion in some other localities, and so convincing are the facts adduced, that we cannot refuse to admit this an occasional cause at least of the disease under discussion.

Thus, in an article on this subject, in the eighth volume of the

* See his *Treatise on Mineral Waters*.

† See *History of Java*, vol. i. p. 60., by Sir T. S. Raffles, late Governor there.

"British and Foreign Quarterly Medical Review," for July, 1839, we have it stated as the result of Mr. M'Clelland's elaborate researches in Kemaon, that "throughout the district of Shore and the neighbouring villages, the prevalence of goître follows, in a remarkable manner, the situation and nature of the strata; the affected villages running along the limestone rocks parallel to the central ridges composed of elay-slate, and which are nearly or altogether exempt from the disease, except in some instances where the inhabitants are supplied from springs rising in limestone rocks." (p. 109.) A particular example supporting this general conclusion is given (at p. 111.) in Mr. M'Clelland's own words. Deota, a lengthened village, is inhabited at one extremity by Brahmins, at the other by Rhajpoots and Domes. Of the first caste there are about twenty persons, all of whom are free from goître; there are forty of the second, and two-thirds are affected more or less; and of the third caste, forty-six in number, nearly the whole are affected. There is a spring situated in the valley near the village, the water of which agglutinates the sand and gravel by which it is surrounded by the deposition of calcareous tuff. The former inhabitants had an aqueduct formed, by which water is conveyed to the Brahmin portion of the village from a distant source, but this having gone out of repair, the water it supplies is reserved exclusively for the Brahmins, except that when during the rainy season it is more abundant the Rhajpoots also use it, while the Domes have no alternative at any season but to use the water of the spring (pp. 111, 112.).

In the same article we read (at p. 113.) that one extremity of the valley (of Baribee) is composed of elay-slate, and in five villages, containing 152 inhabitants, there is not one goître. The other extremity of the valley is partly composed of limestone, and of 192 inhabitants, distributed in six villages, seventy are affected with goître; but Dueygong, one of these villages supplied with water from elay-slate, has not a single case of the disease; while Ager, only half a mile distant, and containing fifty inhabitants, has no less than forty, and of these twenty are eretins (pp. 113, 114.). Evidence of a like cause operating in a far distant country is given (at p. 118.), where it is mentioned that at Geneva, certain wells, now filled up, excavated in a recent calcareous limestone, the waters of which abounded in sulphate of lime, were known to produce the disease in a few weeks or months in natives and in the French soldiers formerly quartered near them, who were exempt while they drank the nearly pure water of the lakes.

True it is, that there are some instances, as that already cited from Sir S. Raffles, which at first sight seem opposed to the view that we have been taking. Thus, in the wild valley of Roilputty (in Kemaon), there are only two villages, containing each twenty-five inhabitants, and both situated on slate rock. The first derives its water from a stream falling over limestone precipices, and a third of the inhabitants approach to the condition of eretins, six of

them having goître; the second, which derives its water from the same stream, one mile and a half lower down, has only one goître (Ibid. p. 113.). We have to regret that in this, as in the former instance, we have no chemical examination to show the identity or difference of composition of the water drawn at different spots in the course of the same stream; but in the absence of this most certain and desirable guide, we may remark upon the possibility at least of some change having taken place intermediately, either from deposition of matters merely suspended, or dissolved in an excess of a volatile principle, such as carbonic acid gas, or from the influx and admixture of waters from other sources. As it is, we attach little weight to these equivocal negative observations. Upon the whole we must remark, that chemical examination of the waters actually in use would, in all cases, furnish far more satisfactory information on this question than the more arduous researches into the geological character of the district.

In a review of Dr. Falck's thesis on the Endemie Bronehocele of Nassau and the Electorate of Hesse (published in the 20th volume of the work already quoted), we find that the author arrives at the conclusion, that in several districts situated on limestone formations, as in Walfhagen and Hofgeismar, bronehocele rarely occurs, while it is frequent in the districts of Sehierke, Lehrbach, and Neuwerk, situated on primitive and transition rocks (p. 174.). Yet if these results be admitted as established, they show only that calcareous impregnation of water is not universally productive of bronehoele, and more certainly that this is not its only cause.

The swelling in bronehocele is at first without pain or any evident fluctuation, and the skin retains its natural appearance; but as the tumour increases in size it grows hard and irregular, the skin acquires a yellow colour, and the veins of the neck become varicose; the face is subject to flushings, and the patient complains of frequent headaches, obstructed respiration, and likewise of pains darting through the body of the tumour. After a lapse of some years it acquires an enormous size, and by its great weight produces considerable inconvenience.

The functions of the intestinal canal are to be regulated throughout the course of the disease by some gentle cathartic, such as a few grains of the hydragryri submurias, joined with rhubarb or jalap.

The formula inserted below * is the preparation of calcined sponge which I have been in the habit of employing, and generally

* R^y Spongiæ Ust. ʒvj.
Pulv. Gum. Acaciæ, ʒj.

——— Zingib. ʒss.

Syrup. Simpl. q. s. M.

fi. Massa, in trochiscos duodecim distribuenda, quorum unus detineatur sub lingua donec liquescat.

* Take Burnt Sponge, six drachms.
Powdered Gum Acacia, one drachm.

——— Ginger, half a drachm.

Common Syrup, a sufficiency.

Mix them, and divide the mass into twelve lozenges, of which one is to be kept under the tongue until it dissolves.

with the desired success. Care must be taken that no more syrup be used than is absolutely necessary to make the dry ingredients cohere; for which reason it must be added slowly, and the mass must be well beaten. The lozenges are to be dried before the fire on a plate that has been slightly oiled, to prevent them from sticking, and must be kept in some vessel tied over with bladder. One of them is to be placed under the tongue morning and night, so as to admit of its gradual solution; and if, after a short time, no apparent benefit seems to be derived, the same may be repeated thrice or even four times a day.

The introduction of the use of iodine in the treatment of goitre is due to Dr. Coindet of Geneva, and so successful has this remedy proved in his hands, and those of others, that no other medicine enjoys the confidence of the profession in any comparable degree. Objections are entertained to its employment during the existence of a plethoric condition or inflammatory tendency in the constitution; hence it will be well, in the first instance, to remove these states, where they exist, by a mild antiphlogistic regimen, such as by a single blood-letting, by the application of leeches, and by the use of gentle saline aperients, according to the exigencies of individual cases. Dr. Copland has found the complaint, in females, very frequently associated with derangement of the uterine functions, and the restoration of these to a healthy state has appeared to facilitate the disappearance, and sometimes almost to remove, the bronchocele. This complication should therefore engage our attention, and, to a certain extent, must influence the treatment. Indeed, we hold it to be universally expedient, in every example of chronic and obstinate disease, to address our treatment, in the first instance, to the more readily removable disorders or abnormal conditions that may be associated with it, and then to direct our remedial measures against the chief malady in the simplest form to which we are able to reduce it. Supposing this to have been done, and the general health to have been as far as possible re-established, we are in a favourable position for pursuing the specific treatment by means of iodine. And, in the employment of this medicine, the remark of Dr. Copland is entitled to much attention, when he says, "the success which Dr. Manson and M. Lugol have derived from it, I know, from experience, to be owing to the small and soluble doses in which they exhibited it." Accordingly, we give below some of the formulæ which he recommends.* The oint-

* R^y. Iodinii, gr. j. ad gr. iij.
Potassii Iodidi, gr. ij. ad gr. vj.

Aquæ distillat. ℥jv.
Syrup. Althææ, ℥j.
Solve, sumat quartam partem ter die.

Vel,
R^y. Potassii Iodidi, gr. xxjv.

Aquæ distillat. ℥j.

* Take Iodine, one grain to three grains.
Iodide of Potassium, two to six grains.
Distilled Water, four ounces.
Syrup of Marshmallow, one ounce.
Dissolve, and let a fourth part be taken thrice a day.

Or,
Take Iodide of Potassium, twenty-four grains.
Distilled Water, an ounce.

ments of iodine *, to be applied externally to the tumour, should always be of the mildest kind ; indeed, it is a universal principle, that where our object is that a medicated ointment should be absorbed, its strength should be regulated so as to prevent much local irritation. The solutions of iodide of potassium alone, or with free iodine, may be given in bitter infusions, as those of ealumba, quassia, or gentian, or in decoction of sarsaparilla, or in sherry wine, where this is not counter-indicated. Free acids are incompatible with the iodide, and free alkalies with the iodine.

Various surgical operations have been resorted to for the cure of goître. Thus, passing a seton through the tumour by means of a trocar-pointed needle, and keeping up a proper discharge thereby, until the swelling has entirely subsided, may be tried if the other means which are recommended should fail, and there be danger of dissolution from the great size of the tumour. Some cases of bronchocele, which were successfully treated in this manner, are recorded in vol. x. part i. of the "Medico-Chirurgical Transactions of London."

In that species of bronchocele where the enlargement of the thyroid gland partakes of a vascular character, with a dilatation of its arteries or veins, and where the tumour is firm, round, and pulsates strongly, especially at its upper part where it is broadest, increases rapidly, and produces oppression of respiration and deglutition, the operation of placing a ligature on the superior thyroïdal artery has been practised in some cases with success, although in others it has failed. The operation was first attempted by Mr. Blizard, and without success ; but it has been successfully practised by Professor Walther, of the university of Bonn, and

Solve terendo in vase vitreo.
Dosis $\mathfrak{m}\text{x}$. ad $\mathfrak{m}\text{xxx}$. ex vehiculo quovis idoneo ter die.

Vel,

\mathcal{R} Potassii Iodidi, gr. xxxvj.
Iodinii, gr. x.

Aquæ distillat. 5x.

Solve terendo in vase vitreo.

Dosis sit $\mathfrak{m}\text{x}$. ad $\mathfrak{m}\text{xxx}$. ter quotidie ex vehiculo quovis idoneo.

* \mathcal{R} Unguent. Iodinii comp. (Ph. L.) $\mathfrak{z}\text{ij}$.

Adipis præparat. $\mathfrak{z}\text{j}$.

Misce fiat unguentum e quo infricetur aliquantulum omni nocte parte affectu.

Vel,

\mathcal{R} Unguent. Hydrarg. Iodidi,

Adipis præparat. $\mathfrak{a}\mathfrak{a}$ $\mathfrak{z}\text{iss}$.

Misce fiat unguent. ut supra applicandum.

Vel,

\mathcal{R} Linimenti Saponis, $\mathfrak{z}\text{jss}$.

Iodinii, gr. viij. ad gr. x.

Misce, *Dr. Copland.*

Dissolve by rubbing in a glass mortar.
Dose, ten to thirty minims in any suitable vehicle thrice a day.

Or,

Take Iodide of Potassium, thirty-six grains.

Iodine, ten grains.

Distilled Water, ten drachms.

Dissolve by rubbing in a glass mortar.

Dose, ten to thirty minims thrice a day, in any suitable vehicle.

* Take compound Iodine ointment, two ounces.

Prepared Lard, one ounce.

Mix and make an ointment, of which let a little be rubbed every night over the affected part.

Or,

\mathcal{R} Take ointment of Iodide of Mercury,

Prepared Lard, of each an ounce and a half.

Make an ointment to be used as before.

Or,

Take Soap Liniment, an ounce and a half.

Iodine, eight to ten grains.

Mix, *Dr. Copland.*

others. Among this number I would mention Mr. Henry Coates, who operated on a young woman in the Salisbury Infirmary, by tying the artery on the left side, in consequence of which the tumour shortly became reduced to one half of its original size.

Possibly pressure on the diseased part might prove a powerful auxiliary to the other means.

It is a well-established fact, that a simple change of residence from the valley where a goitrous person first showed symptoms of the disease, to a different district, or a more elevated spot on the side of the mountain, has in many instances diminished the size of the tumour, and occasionally removed it entirely, and therefore such a removal should be recommended to the inhabitants of valleys who labour under the disease, in addition to medical treatment.

DRACUNCULUS, OR GUINEA-WORM.

THIS disease consists in a small, round worm, very much resembling the string of a violin, and of a white colour all over, except the head, which is black, that is discovered in different parts of the body, immediately between the muscles and cellular membrane. The arms, legs, and thighs, are, however, the most general seats of it, in which parts it is often found of the length of one or two feet.

It is a disease chiefly to be met with among negroes that are brought from the coast of Africa, or sailors who are lately returned thence, and has generally been supposed to arise from bathing in the waters of stagnant ponds, or drinking out of wells where the animalcules, or embryo worms, are deposited. It is said also to be a common complaint at Bombay, and all over that part of the coast of India, particularly during the rainy season.

Sir James M'Gregor reports, in his Medical Sketches, that this malady prevailed very much on the voyage from India to Egypt, both among the troops and seamen; and it was only by separating the sick from the healthy, and by a very strict attention to cleanliness, ventilation, and fumigation, that he was able to arrest its progress. He by no means, however, attributes its appearance to the water which was drunk, as this came from different quarters, Bombay, Ceylon, and Madras; for the officers of the 88th regiment, as well as the artillery, drank the same water, he mentions, and yet escaped.

It is obvious, therefore, that the embryos of the worm must have punctured through the skin, and lodged in it among the men previous to their embarkation.

The most probable way, indeed, of accounting for the rise and production of these worms, is by supposing, that in a minute or embryo state (similar to what happens with the chigre) they penetrate the skin of persons who go exposed without any covering than perhaps a hat, shirt, or trowsers; as those who are properly

elad, and wear stockings and gaiters, or boots, are never attacked : hence common seamen are liable to them, whilst their officers seldom or never suffer from them. This, in my opinion, clearly establishes the origin of the affection.

Intestinal worms possibly may be produced by an internal use of certain waters, or mucilaginous vegetables ; but that those in question can arise from such a cause, cannot readily be admitted ; for, after being received into the stomach by drinking the water in which they are contained, they must become mixed with the chyle, enter the blood in a living state, and finally be deposited in the cellular membrane and interstices of the muscles, to be afterwards hatched, and produce the living dracunculi. In my opinion, they can only be caused by the embryo worms insinuating themselves into different parts of the body ; and, having formed a nidus, in due time acquire a considerable size. Several persons being exposed to their influence may become diseased, and induce us to suppose that the complaint is of an infectious nature, but which certainly is not the case.

The patient is usually sensible of an itching in the part or parts at first ; and, on a narrow inspection, a small bladder or blister may often be observed. The Guinea-worm does not produce, however, any acute pain, until it is near a state of maturity ; at which period the part in which it is lodged becomes swelled, inflamed, and very painful to the touch, and bears a strong resemblance to a boil which is not much disposed to suppurate. The tumour, after having remained in an indolent state for a considerable length of time, breaks at last, and then the head of the worm may be perceived protruded from the orifice ; which, continuing to push a little forward every day, may at last be laid hold of with ease.

No injurious consequences attend on the disease when properly treated, although when the inflammation is very considerable there is often much fever present ; but, by breaking the worm from being in too great a hurry to extract it, large abscesses, and ill-conditioned ulcers, are sometimes formed. In a few instances mortification has ensued, and very large sloughs have been cast off : alarming hæmorrhages have also occurred. Frequently after extracting one worm from a patient, a second, or a third, or even a fourth, will appear ; and after getting one out of the leg, another may be observed in one or both hands, or in the other leg.

While the tumour remains in a hard, indolent state, it will be necessary to keep an emollient poultice constantly applied to it, in order to bring it to a speedy and proper suppuration. When it breaks, and the head of the worm protrudes so far that it can be laid hold of with ease, a piece of cotton rolled up like a quill is then to be tied to it, and as it advances it is to be daily twisted gently round, until the whole is extracted, using at the same time the greatest precaution that it may not be broken. The wound is

then to be covered with dry lint, over which is to be laid a pledget of tow, spread with the *ceratum resinæ*.

We are informed, by Sir James M'Gregor, that the native practitioners are much more successful in getting out the worms than Europeans. After long feeling with their fingers for the body of the worm, they make an incision as nearly as they can judge over its middle, and pulling the worm by a duplicature of it, draw out both ends at one time.

In the treatment of the guinea-worm, mercurial ointment has by some surgeons been rubbed on the parts affected, and electrical shocks have been passed through the tumours, but without any good effect. An internal use of medicine is necessary only where the inflammatory symptoms run high, and then cooling purgatives, with the rest of the antiphlogistic plan, must be resorted to. We are told by Dr. Chisholm,* that an internal use of mercury is highly necessary; and in order to destroy the insect or its ova, the remedy must be employed so as to pervade the system. In the many cases which came under my care during my practice in the West Indies, perfect cures were, however, effected without the use of mercury.

As the malady has been said to spread from a neglect of cleanliness, the greatest attention should be paid to ventilation, and frequent washings and fumigations, in all situations where it makes its appearance. Those who may be unavoidably exposed to its influence, should bathe often in the sea or some river.

ORDER VII.

DOLOROSI. PAINFUL AFFECTIONS.

CEPHALALGIA, OR HEADACH.

THIS affection is, in some instances, general over the whole of the head; at other times it is confined to a particular side; and now and then cases occur where the pain occupies so small a part that it may readily be covered with the end of the finger, which has been called *clavis hystericus*.

The causes which give rise to the headach are most usually indigestion, foulness of the stomach, the hinderance of a free circulation of blood through the head, long exposure to the sun,

* See No. xlii. of the Edinburgh Medical and Surgical Journal, p. 151.

translations of gouty and rheumatic matter from other parts of the body, the stoppage of some long-accustomed evacuation, inebriety, and, lastly, too great a determination of blood to the head. Headach is, however, more frequently a symptomatic affection than a primary one, and often arises in consequence of a fever, or of hypochondriasis, hysteria, or some other nervous disease.

The symptoms which attend on a pain in the head usually vary according to the cause which has produced the complaint.

Where a headach is symptomatic of some other disease, it will be likely to cease on a removal thereof, as in the case of fever. Where the pain comes on suddenly, is acute, and attended with a noise in the ears, giddiness, and a loss of speech, it denotes an attack of apoplexy or palsy. When it arises in hypochondriacal or hysterical persons, is very acute, and accompanied with much throbbing of the temporal arteries, it is apt to terminate in madness. A headach proceeding from some fixed nervous affection, is difficult to be removed entirely, and the patient is liable to frequent returns of it.

Between the head and stomach there is a great sympathy; wherefore it happens that where there is a foulness in the stomach, the head is frequently affected with pain. Where such a cause is apprehended to exist, it will by all means be advisable to give a gentle emetic; and if any costiveness prevails, this should be removed by some proper laxative.

Where the disease proceeds from an over-fulness of the vessels, or from too great a determination of blood to the head, a proper quantity may be drawn off by opening the jugular vein on the side most affected, or by the application of several leeches to the temples, or cupping-glasses to the neck; the patient afterwards taking care to use a spare regimen, to keep his body perfectly open, and to wear nothing tight about his neck. Those who are of a full plethoric habit of body, and who are troubled with severe and frequent attacks of the headach, will act prudently in having recourse to scapulary issues. To alleviate the pain at the time, linen cloths wetted in vinegar and water, or in camphorated spirits, may be applied to the forehead and temples. Where the application of leeches or cupping fail in alleviating the headach, it will frequently be relieved by temperate living, great attention in avoiding an improper diet, and by stomachic bitters, the patient taking occasionally some aperient medicine, such as about two grains of calomel in a pill over-night, succeeded in the morning by a draught of infusion of senna, with a drachm or two of the sulphate of magnesia.

When a headach arises from a translation of gout or rheumatism from some other part, it will be advisable to excite a slight inflammation in the extremities by the application of small blisters; and at the same time to open the body by administering some stomachic purgative, as the *tinctura rhei composita*.

If a venereal taint is the cause of the headach, recourse must be had to mercury, and iodide of potassium, as advised in syphilis.

In the headach which arises as a consequence of some nervous affection, the most proper medicines will be valerian, camphor, eastor, assafœtida, and æther, together with cinchona bark, and steel; which may be administered as recommended in hypochondriasis, hysteria, and dyspepsia. Rubbing the temples from time to time with a little æther may also have a good effect.

The habit is to be rendered at the same time more robust by gentle and regular exercise every day in the open air, particularly on horseback, by a diet consisting chiefly of animal food, with a moderate quantity of wine, and by great regularity as to the hours of rest and rising, and likewise of meals.

Where a headach is attended with great pain, long want of rest, and a slight delirium, we may venture to give opiates in a considerable dose, provided proper evacuations have been premised.

Should we have reason to suppose that the headach has proceeded from a stagnation of serum in the vessels, or on the membranes of the head, perpetual blisters, issues, and mercurial purges, will then be necessary; and along with these we may employ errhines, such as the pulvis asari compositus.

In periodical headachs, we are informed by the late Dr. Fowler, of Stafford, that he experienced the most happy effects from giving the solution of arsenic, as mentioned in the treatment of intermittent fevers. The best way in such cases will be, to begin with about three drops, repeated twice a-day, and so to increase the number gradually to eight or ten.

The extractum belladonnæ has proved singularly successful in a great number of complaints of the head, whether resembling the douloureux, or partaking of an intermittent form. Small doses of one or two grains, repeated every two hours, during a continuance of the pain, have been sufficient. The patient should always be apprised of the probable consequences to vision and the other faculties which may ensue from a use of this medicine. — See the Douloureux.

ODONTALGIA, OR TOOTHACH.

THE toothach consists in an acute pain in one or more of the teeth; but most generally it originates in one, and from that is diffused to the adjacent parts.

A caries of the tooth itself, acted upon by different irritating causes, such as the application of cold, or some acrid matter, is the most usual cause of this complaint; but in some cases it would seem to proceed from a rheumatic affection of the muscles and membranes of the jaw; and here the whole side of the face will be affected. When it takes place in pregnancy, it is to be considered as arising either from an increased irritability or from sympathy.

It may be presumed, that the acrid matter which occasions the toothach is produced by some vice that originates in the tooth it-

self. In some instances, the caries appears first upon the external surface or enamel of the tooth, in one or more spots which are superficial; but in others it commences in the internal surface, or bony part; the former is, however, by far the most frequent. The caries, by spreading and corroding deeper, at length penetrates the substance of the tooth; and the external air, and other matters, getting into the cavity, stimulate the nerve, and thereby excite the toothache.

The most effectual cure for this disease is extraction of the carious tooth: but as this, in some cases, may not be advisable, and in others might be strongly objected to by the patient, it will often be necessary to substitute palliative means.

To relieve the urgency of pain in those cases where there is an opening made into the substance of the tooth by the caries, it is usual to introduce either cotton impregnated with substances of a caustic nature, such as the essential oil of cloves, cayenne, nutmeg, camphorated spirit, chloroform, creasote, &c., together with sulphuric or other mineral acids, or a small pill composed of opium and camphor. In some instances the actual cautery has been employed to destroy the sensibility of the nerve.

To prevent a return of the pain when it has ceased, the hole in the tooth should be widened within by a proper instrument, and then be stopped with leaf-gold, by which operation it may often be preserved for many years without any further inconvenience to the person.

These are the remedies and means to be made use of when the disease is confined to a single tooth; but when the neighbouring parts become likewise affected, or there is no access for such an application to the nerve, in consequence of the tooth having no cavity in it, other measures are to be adopted.

Exciting an irritation in the neighbouring parts, by means of blisters applied behind the ears, or by rubbing the jaws with some kind of rubefacient liniment*, and afterwards keeping them warm with flannel, has often afforded much relief in cases where the pain is somewhat diffused.

Promoting an increased excretion from the salivary glands, by means of pungent masticatories—such as horse-radish, scurvy-grass, ginger, and pellitory-root—has likewise been adopted in similar cases with much advantage.

In those rheumatic affections of the maxillæ to which many persons are subject under certain states of the atmosphere, and in which the pain is not confined to any one tooth, but occupies the

* R. Liniment. Ammon. Fort. f. ℥j.

Vel,

R. Spirit. Camphoræ, f. ℥j.
Liquor. Ammon. f. ℥iij.
Essent. Ol. Bergam. ℥x. M.

* Take Strong Liniment of Ammonia, one ounce.

Or,

Take Camphorated Spirit, one ounce.
Solution of Ammonia, three drs.
Essential Oil of Bergamot, fifteen drops.

Mix them.

whole jaw, the pyrethrum has often been peculiarly useful. When the tenderness or tumour of the gums renders the mastication of the root impracticable, a piece of lint moistened in the tincture prepared as below *, may then be applied to the most painful part, renewing it as the occasion may require; or one of the pills here advised † may be held in the mouth until dissolved.

Washing the teeth every morning with a soft brush or piece of sponge dipped in clear water, frequently removing the tartar from off them, and making use of some absorbent testaceous powder ‡ reduced to a very fine consistence, twice or thrice a-week, are the best means for preserving the teeth. Where the patient is of a scorbutic habit, and the gums inclining to softness and sponginess, they may be washed now and then with what is here advised. §

Charcoal reduced to a fine powder is an excellent dentifrice; and by washing the mouth with a little of it diffused in water, it immediately takes away the bad smell from decayed teeth. A lump of the charcoal should be put a second time into the fire till it is red-hot, and when it becomes cool again, the external ashes are to be blown off, and it is to be immediately reduced to a fine powder in a mortar, and kept close stopped in a phial for use.

Tinctures composed of mineral acids diluted, and concealed under various artifices and gritty substances, tinged of divers colours, are vended in the shops under pompous names as dentifrices; but although they give a whiteness to the teeth, they nevertheless prove highly pernicious to the enamel, and ought therefore to be used with great caution.

* R Pulv. Rad. Pyrethri, ʒx.

Spirit. Rectif. Oj.
Infund. per dies decem et cola.
Postea adde

Camphoræ, ʒj.
Ol. Rosmarin. f. ʒss.
Tinct. Opii, f. ʒij. M.

Fiat Tinctura.

† R Rad. Pyrethri, ʒj.

Mucilag. Gum. Acaciæ, q. s. M.

Fiant pilulæ xij.

‡ R Bol. Armenic.
Corn. Calcinat. āā ʒij. M.

§ R Tinct. Cort. Cinchonæ, f. ʒij.

—— Myrrh. f. ʒss. M.

* Take Pellitory of Spain, powdered, ten drachms.

Rectified Spirit, one pint. Let them infuse for ten days, then strain off the liquor, and add

Camphor, one ounce.
Oil of Rosemary, half a drachm.
Tincture of Opium, two drachms.

Mix them.

† Take Powdered Pellitory of Spain, one drachm.

Mucilage of Gum Acacia, a sufficiency.

Mix them, and form twelve pills therefrom.

‡ Take Bolc Armenic,
Burnt Hartshorn, of each two drachms.

Mix them for a dentifrice.

§ Take Tincture of Peruvian Bark, two ounces.

—— Myrrh, half an ounce.

Mix them.

NEURALGIA, OR TIC DOULOUREUX, PAINFUL AFFECTION OF THE NERVES OF THE FACE.

THIS is one of the most painful complaints to which the human frame is liable, and has engaged the attention of the profession since Dr. Fothergill first described it in his *Medical Observations and Inquiries*. It is the *Trismus Dolorificus* of Sauvage, or *Tic Douloureux*, by which it is commonly known. The term *Neuralgia Facialis* has been adopted by a French nosologist, and while indicating with accuracy and precision the peculiar nature of the disease, is at the same time consistent with a correct and philosophic nomenclature. Whatever may be the cause of the affection, there can be no doubt of its seat being the branches of the fifth pair of nerves which ramify in three principal divisions over the side of the face. The most frequent situation of tic are the nerves which spread over the cheek bones, just below the orbit, the alæ of the nose, the upper lip, teeth and gums. In such cases the superior maxillary nerve or second branch of the fifth pair is the source of the pain, its branches being chiefly distributed to the parts just mentioned. Sometimes the forehead and temple, and inner canthus of the eye, and even the globe of the eye itself, are first affected, from the first branch of the fifth pair, the ophthalmic branch being the subject of the disease; and as there are some cases recorded in which the patient suffered much from an effusion of tears, it might probably arise from that branch of the ophthalmic which goes to the lachrymal gland being the seat of the disorder.

When the lower jaw and tongue are affected, in addition to the parts already named, the third branch of the fifth pair, or lower maxillary nerve, is diseased.

Neuralgic pains are not, however, confined to different parts of the head, but have been met with in other portions of the body, such as the breast, side, hip-joint, calf of the leg, and thumb.*

The only diseases with which tic douloureux can be confounded are, rheumatism, hemicrania, and toothach. It is to be distinguished from the first of these by a paroxysm being excited by the slightest touch, by the shortness of its duration, and the extreme violence of the pain. Neither are the symptoms similar; for in rheumatism, if acute, there is fever with redness and increased heat in the affected part, and generally some degree of swelling; if chronic, the pain is obtuse, long continued, and often increased at night; whereas none of these symptoms usually occur in the *morbus crucians faciei*.

From hemicrania it may clearly be distinguished by the circumstance of the pain in tic douloureux accurately following the ramifications of the affected nerve.

* See Mr. Pearson's Paper in *Medico-Chirurgical Transactions*, vol. viii. p. 252.

It may be known from the toothach by the shortness of the paroxysm and the rapidity of its suecession, and during the interval an entire freedom from all pain; the seat of the pain, and its darting in several direetions, according to the partieular nerve affected, with an aeuteness and poignaney differing from that of the toothach, which seems to strike deep, — while the pain of the morbus erueians faiei is always more superfieial, and infinitely more laneinating; and, lastly, the convulsive twitehings, which, though not always present, are very frequent, and are never experienced in odontalgia.

Neuralgia faiei spasmodica commonly arises in persons of a delicate, irritable habit, at that period of their lives when the bodily strength begins to give way—for the most part between the fortieth and fiftieth year; but it has occurred at all ages, in both sexes, and in the strong as well as the debilitated, and is excited into action by exposure to a cold and humid atmosphere, by great fatigue, by external violence, and by uneasiness of mind.

Stimulating and anodyne embroeations, blisters, moxa, topical bleeding by means of leeches, frietions with mercurial ointment*, as also the tartrate of antimony, preparations of quicksilver, particularly the submuriate, given in combination with opium in doses suffieient to exhibit a decided constitutional influence†, the application of ice or very cold water, and electricity, have been resorted to in the palliative treatment of neuralgia faeialis; and the arsenieal solution, extraets of hemloek, stramonium, hyoseyanus, and opium, in considerable doses, frequently repeated, as well as being applied externally in the form of liniment, the extraet of einchona in very large doses, colchicum, guaiacum, the sulphate of quinine, and the different medicines usually administered in rheumatic and nervous complaints, have at the same time been given internally with a temporary relief. Iodide of potassium was strongly advocated in this complaint by the late Mr. John Scott.

In some cases of the douloureux which have resisted the effects of the arsenieal solution, the nitrate of silver, the extraet of henbane, in considerable doses, and opium, the ferri carbonas may be often employed with great suecess. It is given in doses of two scruples to a draehm, repeated two or three times a-day. When we reflect how much of the pathology of the disease rests upon irritability and debility of the body generally, we can very satisfactorily account for the good effects resulting from the administration of the carbonate of iron.

A severe case of the disease in a gentleman of about sixty years of age lately came under my care, wherein I was induced to make trial of this medicine, owing to a failure of the einchona, arsenieal

* See vol. iii. p. 272. of the Edinburgh Journal, for a case of tic douloureux successfully treated with mercurial ointment so as to excite a copious ptyalism.

† See vol. iv. p. 306. of the same Journal; and vol. vii. p. 381. of the New Medical and Physical Journal.

solution, and every other means that had been adopted prior to my being consulted; and it is an undoubted fact, that the malady soon ceased, and has not again returned, although a length of time has elapsed since its removal.

It appears from the report of a late writer*, that he has employed belladonna in this excruciating disease with a very good effect. In many cases recorded by him, which were attended by excessive pain, and which had resisted every means before tried, this medicine proved effectual. From two to three grains of the extract, or from twenty to forty minims of the tincture, in any vehicle, were administered every four or five hours, during the severity of the paroxysms, to adults, but the dose was considerably lessened when ease was procured. It appears that the use of belladonna is, however, accompanied by some distressing symptoms, such as giddiness in the head, impaired vision, numbness, tightness in the chest, and a sense of dryness in the throat and suffocation, when given in such doses as to produce a certain effect; but these soon cease on diminishing the dose, or wholly discontinuing the medicine. The effects of this medicine on the nervous system are so peculiar and rapid, that the greatest caution is necessary whenever we administer it.

It appears, then, that belladonna exercises a striking and powerful influence over those chronic sympathetic irritations that particularly belong to the head and face, which harass and distress the sufferer to an almost interminable length, and which hitherto had shown nearly an unyielding obstinacy to the power of every medicine. Besides the internal use of belladonna, a tincture of it has been employed as an external application in some cases with advantage. Lastly, aconitine, the active principle of monkshood, has been found of most valuable service in benumbing and destroying the morbid sensibility of the nerves in the tic douloureux. For the same object we may employ also the tincture of aconite diluted with half its volume of lin. saponis, carefully rubbing it over the affected parts until a sense of numbness is produced. Dr. Watson says, "This is a remedy which is not to be neglected, even if it only allayed the pain for a time it would be valuable. But judging from the instances referred to, we may hope that, in some form of the tic douloureux, the aconitine may be found equal to their cure." One grain of the aconitine is to be mixed with one drachm of cerate, and a small portion of it smeared over the track of the painful nerve once or twice a day.

By comparing the success which has followed the exhibition of the different remedies which have been employed in neuralgia faciei, it appears that a decided preference is due to the carbonate of iron, belladonna, aconite, and sulphate of quinine; the latter being a medicine highly spoken of by the physicians in France, and admi-

* See Observations on the Use of Belladonna in Painful Disorders of the Head and Face, by Mr. John Bailey.

nistered by them in doses of from sixteen grains to a scruple in the twenty-four hours.

It has been attempted to exterminate this painful affection in some instances by a division of the nerve; and the operation is fully justified by the extreme acuteness of the disorder, and by some degree of success that has attended this mode of treatment. It is well known, however, that the operation, although a radical cure in the part immediately affected, does not always prevent a recurrence of the pain in the collateral branches of the nerves; and, therefore, previous to having recourse to it, we should consider whether the nerve or nerves can be divided between the part where the pain originated and the parts to which it afterwards extended. When this can be done, there will be a probability of operating with success; but when several parts are attacked at the same time, or where the pain extends in several directions from the part primarily impressed, there will be but little reason to expect advantage from an operation.

The excision of a portion of the nerve has been practised in a few cases, but without the desired effect.

Paralysing the nerves by the application of cerussa, succeeded in a case* under the care of Sir Astley Cooper, that had resisted every other remedy, and even the knife. Two scruples of this, formed into an ointment, were rubbed in the morning on the affected cheek, about an hour before the paroxysm was expected. The application was continued for a month or more, and the patient (who was a man) left the hospital apparently perfectly cured. The effect of the lead is reported to have been rapid and striking, the person being rendered comparatively comfortable in a short time, from a state of excruciating torment. No particular effect was produced by cerussa on the stomach or bowels.

It has already been observed, that the *douloureux* is pretty generally supposed to be primarily seated in the nerves of the face; but a modern writer thinks, however, that it has its origin in the brain, to which the affection of the face merely stands in the relation of an effect. This opinion, he says†, has been impressed upon his mind by a careful examination of the cases which have fallen under his eyes; in the whole course of which the affection of the face was preceded and attended by clear manifestations of cerebral disease, such as pain, giddiness in the head, confusion, or some other uneasiness in the head, more or less disorder in the functions of some of the external senses, with symptoms of congestion, or of increased action in the vessels of the brain, and sometimes the stomach and liver were simultaneously or sympathetically affected, — a circumstance not uncommon in many diseases of the sensorium.

* See Mr. Bedingfield's *Compendium of Medical Practice*, chapter xii.

† See *Practical Illustrations of Typhus and other Febrile Diseases*, p. 212, by Dr. Armstrong.

Forceibly struck with the appearances that indicated the seat of the malady in question to be in the brain, the physician alluded to resolved to try the power of decided bleeding, both general and local, and purging. In many cases of a recent nature, this plan, we are told, succeeded without any other aid. In one of much longer standing, the plan was followed up by opium and the submuriate of mercury combined together. The occasional application of a blister, either to the scalp or nape of the neck, might be likely, he supposes, to assist the use of purgatives, and the depletion by general and topical bleeding.

From a consideration of all the circumstances attendant on tic douloureux, Dr. Parry* was induced to attribute this painful affection to increased vascularity, or determination of blood (amounting, perhaps, to inflammation) to the neurilema or vascular membranous envelope branches of the trigeminus. Of course, the plan of treatment advised by him was depletion by general and local bleedings.

Sir Henry Hallford has published a series of cases which tend to show that the disease is now and then connected with some preternatural growth of bone about the head and face, or with a diseased condition of a bone or bony canal.

GASTRODYNIA, OR PAIN IN THE STOMACH.

THIS disease often occurs in those who are afflicted with dyspeptic symptoms, such as heartburn, cructations, flatulency, &c.

In addition to what has been mentioned of these complaints, under the head of Dyspepsia, it may be proper to notice that cardialgia and gastrodynia originate from an inactivity of the stomach, whence the aliment, instead of being concocted by digestion, and converted into chyle, runs into fermentation, producing acetous acid. Sometimes the gastric juice itself becomes so acid as to give pain to the upper orifice of the stomach; and it is probable that violent cardialgia is more frequently owing to an increase of the acidity of the gastric juice than to the acetous acid produced by fermenting aliment.

The heartburn, as arising from indigestion, is often an afflicting and pertinacious complaint, being not unfrequently attended with an emaciation of the body from the want of sufficient chyle. To obtain a temporary relief, we must have recourse to antacids, calcareous earths, alkaline salts, the aerated alkaline water, or Seltzer water. To check the fermentation in severe cases, we may employ the sulphuric acid in a diluted state, together with a due quantity of brandy or other spirit lowered with water; but for the purpose of procuring a permanent relief, we should endeavour to strengthen the digestion by the stimulus of a blister externally, and by the use of aromatics, bitters, and chalybeates, internally, as advised under the head of Dyspepsia.

* See his Elements of Pathology and Therapeutics.

The diet should consist of such things as do not easily ferment, such as animal food, shell-fish, and biscuit.

Flatulency is to be obviated by carminatives and a due observance of the means just mentioned. Perhaps a waistcoat or girt worn so tight as slightly to compress the stomach and bowels, might prove serviceable in assisting the digestive process.

In gastrodynia, where the pain is the result of functional disease, an adequate dose of opium speedily dissipates it, invigorates the stomach, and improves the general health; and when the pain returns, which it mostly does once in twenty-four hours, the repetition or augmentation of the dose again subdues it. The tinctura opii may be combined with æther and camphor mixture, in the form of a draught. Volatile alkali, in conjunction with magnesia, peppermint water, and occasionally the tincture of hyoseyanus, will be found highly serviceable in general, but particularly when a rigid animal food diet, and a moderate allowance of brandy and water, or good wine, are at the same time carefully adhered to.

The nitrate of bismuth is a remedy which may be employed with considerable advantage in gastrodynia, especially when Pyrosis is an accompaniment—(see Dyspepsia). The proper dose is from three to ten grains, with about twenty-five grains of gum tragacanth, repeated three times a-day. We had better, however, begin with a dose of five grains, and so increase it gradually, administering it half an hour previous to each meal.

SPRAINS.

ACCIDENTS of this nature happen most frequently in the wrists, knees, and ankles; and are usually occasioned by a slip, or some sudden effort or violent exertion.

Sprains of the tendons and ligaments are usually productive of an immediate painful and inflammatory swelling. In severe sprains there is often not only an increased action of the arteries in the inflamed part, but there is likewise an instantaneous effusion from the rupture of some of the small vessels. In general, we may suppose the effusion to be of the serous kind, as the skin is not altered in colour for some time after the accident; but it sometimes happens that the tumid parts are either of a deep red or leaden colour from the very first, owing to blood being extravasated from the ruptured vessels.

In the treatment of sprains, two circumstances are principally to be attended to: the first, to prevent, by all possible means, the swelling from arriving at any considerable magnitude; the second, to employ those remedies which are known to be powerful in removing inflammation.

To answer the first of these intentions, restringent applications, such as vinegar, ardent spirits, and the lees of red wine, may be made use of. By immersing the injured part in any of these

immediately on receiving the injury, the effusion will be rendered much less than it otherwise would be, and may perhaps be altogether prevented. Plunging the sprained limb into the coldest water that can be procured as soon after the accident as possible, is often attended with a good effect, and may be advised as the first step, till one or other of the articles just mentioned can be procured.

To answer the second intention, of removing inflammation, we may have recourse to local blood-letting by the application of several leeches to the tumid part; and if the pain and inflammation do not subside readily, they may be applied again the next day. Should any degree of fever attend in consequence of the violence of the sprain, opiates, together with refrigerants, and the remedies which prove useful in other inflammations producing fever, ought to be administered.

In cases where the accident is trifling, or after blood has been drawn off from the part affected, we may apply a solution of the plumbi acetatis, or liquor plumbi subacetatis properly diluted, by keeping linen cloths dipped in either of them constantly to it throughout the course of the day. At night, a poultice consisting of oatmeal and linsced-meal, mixed up with vinegar, may be laid on. This last, however, will not be essentially necessary, except where much tension and pain are present.

With these and such other diseutient applications*, proper rest will be necessary for the limb, which never should be kept in a pendent position.

Where a weakness remains in consequence of a sprain, pumping cold water upon the part every morning, and wearing a calico bandage for a considerable length of time, as a support to it, will be the best means to pursue.

* R₃ Liquor Ammoniaë Acetatis,
Liniment. Saponis, aa f. ʒj. M.

Vel,

R₃ Liniment. Camphoræ,
Liquor. Ammon. Acetat. aa f. ʒj.

Tinct. Opii, f. ʒss. M.

Vel,

R₃ Ammoniaë Muriat. ʒij.
Acidi Acetici dilut.
Spir. Rectific. aa Oss. M.

Vel,

R₃ Olei Succin.
Tinct. Opii, aa f. ʒij.

Adipis Præpar. ʒj. M.
ft. Linimentum.

* Take Solution of Acetate of Ammonia,
Soap Liniment, of each one ounce.
Mix them.

Or,

Take Camphor Liniment,
Solution of Acetate of Ammonia,
of each one ounce.
Tincture of Opium, half an ounce.

Mix them.

Or,

Take Muriate of Ammonia, two drachms.
Distilled Vinegar,
Rectified Spirit, of each half a
pint.

Mix them.

Or,

Take Oil of Amber,
Tincture of Opium, of each two
ounces.
Prepared Lard, one drachm.

Mix them. To be used as a liniment.

LITHIASIS, OR GRAVEL AND STONE.

THE urine, when recently passed, should be an almost transparent fluid, having all its constituents in complete solution, but after standing some time, slight cloudiness may usually be observed, — produced by the gradual separation of a small amount of mucus, &c., and at other times a decided deposit of saline matter occurs, as the fluid loses its temperature, but is immediately re-dissolved on the application of a gentle heat.

The urine often suffers great alterations in its physical and chemical states, dependent on the innumerable circumstances which constantly alter the balance between the various processes by which effete matters are removed from the body, without subjecting the individual to disease. Thus instances of temporary suspension of the excretive function of the skin or liver are by no means uncommonly observed to produce most obvious changes in the secretion of the kidneys; and, within certain limits, this vicarious duty affords an immunity to the system.

On the other hand, under peculiar circumstances, certain saline or other matters are deposited from the urine, while within the body, as an impalpable powder, or a crystalline or amorphous concretion, constituting the conditions known as turbulent urine, gravel or sand, and calculi.

The urine being a very complex fluid, these concretions are obviously subject to much variety; for whenever one of the ordinary elements becomes more abundant in proportion to the liquid, or less soluble by the presence of any substance which affects the combination, precipitation of that element may take place.

The presence of these aggregations of solid matter in any part of the urinary system, gives rise to many symptoms, which vary according to the position of the mass, and other circumstances; but a description of the principal ones met with in the generality of cases will here suffice.

These deposits may take place in the kidneys, ureters, bladder, or urethra, but they usually commence in the kidneys or bladder, and, when found in other situations, they have generally been displaced from one or other of these.

A patient may pass a large amount of sand in his water for a very long period without any inconvenience, and may only be conscious of the fact by seeing it in the chamber utensil.

Or he may suffer very considerable irritation, with almost constant desire to pass water; this may last for an indefinite time, when, perhaps, he is surprised, on making water, to find more or less blood pass with it. This may occur again and again, increasing when he takes violent exercise, and subsiding with rest.

When there is a stone formed in one of the kidneys, it may remain there for an indefinite period, till by accident it becomes displaced, and falls into the upper part of the ureter. The patient is

then probably seized with very severe pain in the neighbourhood of the kidney, extending down to the groin and upper part of the thigh, and the corresponding testicle is violently drawn up; he becomes extremely sick, and continues to suffer constant or periodical pain for some hours or days, during which time the calculus may gradually travel as far as the bladder, when he obtains sudden relief by its escape into the cavity of that organ; or should it become fixed in the ureter, death soon takes place by its producing suppression of urine. When the stone reaches the bladder, it may produce no further trouble for some time, during which it is probably gradually increasing in size, by continued accretion of the same substance, or of some other constituent of the urine. On the other hand, its presence may excite more or less irritation of the bladder, with frequent desire to pass water, and a small quantity of blood comes with the last drops, leaving more or less pain, which is often referred to the end of the penis; and on sounding the bladder with a metallic catheter or sound, the stone may generally be recognised.

While the stone remains about the size which the ureter permitted to pass, it may be expelled from the bladder while the patient is making water, or it may traverse the urethra for some distance, and then become impacted, and so produce retention of urine. The situations in which this is most likely to occur are immediately behind the glans penis, or, should the patient have a stricture, near to that in the perinæum. This is known to have taken place by the sudden stoppage to the urine; and, on passing a catheter, it comes in contact with the calculus. But should the stone remain in the bladder, it may continue to increase to an indefinite extent; — cases are on record in which they have attained the extraordinary weight of forty-four ounces. It frequently happens that a small nucleus, consisting of a trifling stone, which has descended one of the ureters into the bladder, thus becomes, by successive deposits on its surface, a mass of many ounces in weight, in which two, three, or even more, varieties of matter are arranged in consecutive strata, having usually a concentric arrangement.

The calculus then remaining in the bladder gives rise sooner or later to severe suffering, — the mucous membrane becomes inflamed; a large quantity of mucus is poured into its cavity, and decomposing re-acts on the urine, setting free ammoniacal gas; the urine becomes alkaline, and a rapid deposit of phosphates takes place; the stone rapidly increases in size, and, rolling about with very considerable movement of the body, the patient's sufferings are such as rapidly to undermine his health, and if art do not interfere death soon succeeds.

The principal varieties of calculous deposits are the uric acid and urates, the phosphates, and the oxalates, but this classification does not include several of the rarer kinds, such as those composed of uric oxide, cystine, carbonate of lime, &c.

Uric acid is the most common deposit found in the urine; it may

be free, or combined with ammonia or soda. It commonly appears as a red sand, pink or like cayenne pepper. This acid, when free, is very slightly soluble; thus it often appears after liberal indulgence in articles of diet which contain a large amount of other acids, by which this is displaced from its combinations; and it appears probable that any circumstance which checks the elimination of lactic acid in the perspiration by the skin, tends to the deposition of this substance from the urine. It is often found in the urine of many persons after it has stood some time, and been allowed to cool. Its excess is constantly associated with that of urica and colouring matters in the urine, and a peculiar disposition to gouty and rheumatic affections attends it. It is most common in infancy and the decline of life, and many persons have a constitutional tendency to it. Sir B. Brodie observes that, "in the (so called) better classes of society, you will find the deposition of red sand to exist chiefly in adult persons, but in the lower classes you find it chiefly among children. These circumstances are easily explained. Adult persons, in affluent circumstances, for the most part lead a more luxurious and indolent life than their children; while among those of lower condition the diet of the children is frequently unwholesome, and comparatively little attention is paid to the various derangements of the digestive organs to which they are liable."

"These calculi are generally of an oval form, and slightly flattened; of a brownish-red colour, approaching to that of mahogany; rather smooth on the surface but not polished, except occasionally from friction, when there are two or more in the same bladder. If broken, the lithic acid splits into concentric laminae."

The phosphates consist of those of lime, ammonia, and magnesia. They are much less common than those of uric acid. "Unmixed phosphate of lime is rare; the double salt (phosphate of magnesia and ammonia) is less so; but the two together (constituting the fusible calculus) are most frequent. These salts are very insoluble, but in healthy urine are held in solution by an excess of acid. They appear in the sediment sometimes in the form of white, shining, crystalline grains, which are, however, almost always mixed with a much larger proportion of a whitish or greyish amorphous impalpable powder; and the latter is often present alone. The phosphatic deposit is distinguished by its white colour, its insolubility in solution of potassa, and its ready solubility in dilute muriatic and acetic acids." The urine is pale and abundant, alkaline or neutral, and on standing is often covered by a thin iridescent pellicle, composed of beautiful microscopic crystals.

The triple phosphate (of magnesia and ammonia) "forms a fragile calculus, and when broken it does not, like the lithic acid calculus, split into the concentric laminae. The surface of it is uneven, covered with minute crystals."

Phosphate of lime calculi are seldom found in the bladder, and

are supposed to arise more from the mucus of the bladder than from the urine. They "are of a pale brown colour, and of a laminated structure."

"The mixed (fusible) calculus is of a white colour, friable, not unlike a mass of chalk in appearance; not in general laminated. It melts into a vitreous substance when exposed to heat in the flame of a blow pipe."

The phosphates are deposited whenever the urine becomes alkaline, and frequently accompany long and debilitating diseases, especially such as mainly affect the nervous system, inflammation of the mucous membrane of the kidneys and bladder, particularly when arising from the presence of a calculus or other foreign body.

Oxalate of lime is deposited from the urine in the form of minute transparent crystals or as the mulberry calculus. The former has but recently been known to be a frequent sediment in the urine. Persons subject to irritable dyspepsia are frequently found to pass in their urine, when examined by means of the microscope, small transparent octohedral crystals, which are insoluble in acetic acid and potassa, but soluble in nitric acid. The urine is generally clear, and contains an excess of urea. The crystals are not always easily found, for, their specific gravity differing but little from that of the urine, they are not deposited, but float about in the liquid; on applying heat and so diminishing its specific gravity, the crystals then fall to the bottom of the fluid. Occasionally the crystals assume the form of a dumb-bell, or are circular or oval. "Little is known of the cause of oxalic lithiasis; the system is not obviously much deranged before the attack."

The indications in the treatment of lithiasis are first to prevent the deposition of calculous matter; and, secondly, that failing, to remove it when deposited. "To render the uric acid more soluble, recourse must be had to the alkalies or alkaline earths. These are, indeed, by far the most efficient remedies in this variety of lithiasis. The bicarbonate of soda or potassa should be preferred, as less liable than the caustic alkalies, or even their carbonates, to injure the stomach and impair digestion. Either of these bicarbonates may be given for a long time without injury." The best form in which they can be given is in a state of effervescence. Thus, "half a drachm of bicarbonate of soda may be given, dissolved in four or eight ounces of carbonic acid water, with or without ginger syrup, four times a day." The above requisitions are supplied in the natural mineral waters of Vichy, so celebrated in lithic acid complaints. The patient should also partake freely of diluents, such as tea, gruel, toast-and-water, &c.; but such as contain acids should be avoided.

He should live principally on vegetable diet, and spirituous and fermentable fluids must be proscribed.

The frequent use of the warm or vapour bath is generally of great service.

The patient should take much active exercise, so as to keep up a good action of the skin; and this may be occasionally increased by diaphoretics combined with purgatives. Thus two or three grains of blue pill may be given at night, in combination with five to ten grains of Dover's powder, to be followed the next morning by a Seidlitz powder.

When the phosphates are deposited, it is of great importance that every attention be paid to the general health. Their production is usually accompanied by great debility, which, of course, must be treated with reference to its cause. Fatigue, both mental and corporeal, is especially to be avoided. Every means must be used to improve the digestion, and generally a very liberal diet may be allowed, with addition of wine, beer, or even spirits. Opium and the mineral acids afford us the most useful remedies in this form of lithiasis. They are to be freely administered and to be repeated periodically. Thus five to ten drops of the nitro-hydro-chloric acid, combined with an ounce of the decoction of bark, may be given three or four times daily. And the patient may be kept slightly under the influence of opium; thus, for an adult from $\frac{1}{4}$ to 1 grain of opium may be given in pill, two or three times a day, or $\frac{1}{6}$ to $\frac{1}{2}$ grain of the hydro-chlorate of morphia may be added to the above mixture.

The alkaline bicarbonates here also are of very great use, and, combined with tonics, produce great benefit; thus ℥j. or ʒss. of bicarbonate of soda, or potassa, may be administered in an ounce of the decoction of bark, or in an ounce of decoction of *uvæ ursi*, or the same quantity of the infusion of *Pareira*, twice or thrice daily. When a large amount of viscid mucus is secreted by the bladder, the daily use of the catheter to draw off the urine will generally be required, and afterwards the bladder may be washed out by injecting a few ounces of warm water, slightly acidulated by adding two or three drops of nitric acid to each ounce.

In the treatment of the oxalic lithiasis we must also attend particularly to the digestive organs. Tonics will usually be required, and they may be combined with alteratives. Thus the secretions should be regulated by an occasional small dose of mercury, as blue pill gr. j.—iij., or the mercury and chalk gr. j.—v., once or twice a week, given in pill at night, and followed the next morning by a moderate dose of black draught. The decoction of bark, with the mineral acids, may be given daily twice or thrice; or quinine, in small doses. A careful avoidance of acid or fermentable food, particularly rhubarb and sweetmeats, must be recommended, and all indigestible substances avoided.

When a calculus has formed in the kidney or bladder, so long as it remains no larger than an ordinary horsebean, there is reason to hope it may be got rid of by the natural outlet.

During its passage down the ureter, opium may be freely administered to diminish the pain; the warm bath, too, will probably

afford relief, and ice may be applied to the loins. Probably, chloroform carefully administered might produce great relief.

When it has reached the bladder the patient should take a large quantity of unstimulating drinks, and when about to pass water he should stand or lie on his stomach, and, grasping the penis between his fingers, retain the urine until the passage is distended; then, on making water, the stone may escape with it.

Should he not succeed by this means, the urethra should be gently dilated by means of bougies, and this plan re-attempted; if still unsuccessful, a small urethra forceps may, perhaps, seize it, or the lithotrite must be introduced to crush it, and so enable the patient to pass the fragments. When too large to admit of removal by these means, the only hope remaining is the incision of the bladder — lithotomy. Instances are recorded in which, by means of solvents injected into the bladder, large calculi have been disintegrated, but as yet sufficient experience has not been obtained to enable us to prescribe this plan with any certainty of success.

The reader is referred for further information on this subject to Sir B. Brodie's "Lectures on the Urinary Organs," to Dr. Golding Bird's work "On the Urinary Deposits," to Dr. Willis "On Urinary Diseases," Dr. Watson's "Lectures on the Practice of Physic," and to Dr. Wood's "Treatise on the Practice of Medicine."

ORDER VIII.

DIALYSES.

DISCONTINUITY of a part manifest to the sight or touch.

ULCUS, OR ULCER.

By an ulcer is understood a loss of substance or tissue in some part of the surface of the body, caused by ulcerative inflammation or by mortification. An ulcer may occur in any region of the body; but, as I shall hereafter explain, certain situations are more liable to be thus affected than others. Thus we find it to be a law of the animal economy, that those parts that are the most remote from the centre of circulation are the most prone to ulcerate, and the least disposed to heal.

Ulcers may be conveniently arranged, according to their state, into acute or spreading, healthy or healing, chronic or stationary.

The causes are constitutional and local. Constitutional causes are chiefly scrofula, syphilis, extreme plethora or anaemia, and any serious constitutional derangement. Specific or constitutional

ulcers may be recognised by certain well-defined local peculiarities in their appearance, which my limits will not allow me to dwell upon, and by other evidences of constitutional poison. The principal local causes of ulcers are—external injury, the existence of an old scar or cicatrix, a very dependent position of a part, enlarged veins, and any obstruction to the circulation. In consequence of this latter cause, ulcers are more prone to form and more difficult to heal in the lower limbs than in any other situation.

If any part of the surface of the body receive an injury of a sufficiently severe character, the result will be abrasion or destruction of the part, so that mortification or sloughing may occur; which, as it gradually separates by ulcerative inflammation, leaves an ulcer behind; or inflammation of an acute character may be set up, in the centre of which an ulcer will gradually form, will go on spreading for a certain time, and will then change its character, and become either a healthy healing sore, or a chronic stationary one.

All this is peculiarly prone to occur if the injury is inflicted on a part in which the circulation is weak,—as, for example, the leg; and hence it is that ulcers are so very much more common in this situation than any other; and for the same reason they often pass into the chronic or stationary condition when in this situation.

It is essential to the successful treatment of ulcers that we should be able correctly to ascertain, by their appearance and symptoms, in what stage they are;—whether acute or spreading, or healthy and healing, or chronic and stationary. Each of these conditions has its suitable plan of treatment, that would be useless or injurious at another stage; and we thus have strongly impressed upon our minds, in this as in all other forms of disease, the exceeding absurdity of quack or empirical appliances; which may, by accident, benefit one case, but must, of necessity, be wholly unsuited to the great majority of cases for which they may be used.

In the acute form of ulceration, the pain is considerable, the surrounding parts are of a bright red colour, there is some swelling and œdema, the sore is uneven and glassy, the edges irregular and undefined, the discharge thin and irritating. As the acute stage passes off, a more healthy condition supervenes: the margin of the ulcer becomes defined and even, the surface of a redder colour, the discharge thicker and more like genuine pus, the surrounding parts of a less bright red colour; by degrees the sore which was excavated begins to fill up, the surface becomes covered with a number of small fleshy elevations, termed granulations; these continue to grow until they are level with the surrounding parts, or they may rise above that level, when they are commonly known as “proud flesh.” The margin of the ulcer now becomes white, which indicates that the cicatrizing or healing process has commenced; a delicate skin gradually creeps over the surface, and the sore is cured.

But the acute ulcer does not always thus pass into a healthy healing sore. If it be situated in a part remote from the circula-

tion, if the veins be enlarged and varicose (a condition of parts frequently to be found in the lower extremity), and if at the same time the constitution has been either over-stimulated by intemperance or weakened and impaired by insufficient or unwholesome food, — under any of these conditions, singly or combined, an inflamed ulcer will usually relapse into a chronic or stationary condition, being modified in its appearance and symptoms by the greater or less prevalence of some of the local or constitutional causes I have just mentioned. Thus, after the acute symptoms have subsided, and the heat is gone, it may still look glassy, discharge a thin acrid matter, and be exceedingly painful: this is the “irritable ulcer.” Or it may become of a pale colour, the surface nearly dry, with imperfect, ill-formed granulations: this has been called the “weak or flabby ulcer.” Or its edges may become gradually raised, hardened, and thickened; the surrounding parts for some distance may change from red to a much deeper colour, of a brownish or dark blue shade, the sore itself being smooth, excavated, and vascular, of a dark red colour, but without any trace of healthy granulations. This constitutes the true “chronic or indurated sore;” it presents many modifications, often accompanies old age, and may remain stationary, or nearly so, for many years.

In the purely constitutional or specific ulcer, we find all parts of the body liable to be invaded. Such sores take on certain peculiar forms, which my limits forbid me to enter upon, — spreading or healing in obedience to the activity of the peculiar poison upon which they depend.

We may now consider the subject of treatment; and, in the first place, it is desirable to state a few simple rules that should ever guide us in the management of ulcers.

Our first aim should be to prevent, if possible, at the very outset, the formation of an ulcer, by imitating and aiding Nature in the formation of a dry scab. If, after the receipt of an injury in a part prone to ulcerate, this can be managed, the scab will gradually loosen and drop off, and no ulcer will form. For this purpose something that dries quickly, that adheres, and that is unirritating, is required. Nature employs the oosings of serum and blood upon the injured surface, which, when exposed to the air, dry and scab upon the injured part. This is the happiest result that can occur, and it would be but officious meddling surgery to interfere to remove it. But in the event of a slight injury on the skin, or any part of the lower limbs, we may sometimes, by at once protecting the part and obtaining a scab, prevent an ulcer. The inner membrane of the egg-shell, well moistened with the white of a raw egg, is a ready means of obtaining this. Other similar means — as a solution of gum, isinglass, goldbeaters’ skin — may accomplish the same result, and save weeks, months, and even years of inconvenience and suffering.

But in severe injuries, and where a strong tendency to ulceration

is found to exist, the different stages I have described occur, and in treatment we must ever bear in mind that we cannot control this beyond a very limited degree, and that the tendency is towards cure. The acute ulcerative inflammation removes parts that have been injured and unfitted for their function, and the subsequent stages build up and restore the parts that have been removed. During all this the treatment can hardly be too simple. Rest is desirable, and in most cases imperative during the acute stage, as movement and the dependent position cause severe pain. Light, moist, soothing applications of a temperature suited to the feelings of the patient are indicated. The "water-dressing," as it is termed, is one of the cleanest and best methods of accomplishing this: it consists of two or three layers of soft lint kept moistened with water and laid over the part, and covered by a piece of oil silk larger than the lint to prevent evaporation. Sometimes a well-made poultice seems to give more comfort, and is more convenient if the discharge is very foul and abundant, and a lotion composed of a weak solution of the chloride of lime, a drachm of Beaufoy's solution to a pint of water, either alone or in the poultice, assists in cleansing a foul surface. As the inflammation subsides, and the surface becomes healthy, if rest is continued, a very mild treatment is still required: the water-dressing may be continued so long as the discharge is thick and the granulations healthy; if they become large and flabby some stimulus is required, as a solution of the nitrate of silver or sulphate of copper, ten grains to an ounce of distilled water, painted on, as it may be necessary, from day to day: at the same time, it may be desirable to leave off the water-dressing if the surface become dry and inactive. Some mild stimulating ointment, or a few strips of the Emp. Plumbi spread on unglazed calico, and a bandage put lightly on and changed daily, will bring the case to a successful issue.

We have now only a few words to say respecting those cases that do not heal, but become chronic and stationary. Such cases have long been the opprobria of surgery; they sometimes continue for many years unhealed, a constant satire upon the profession, attending each hospital in turn, and the patient, wearied with legitimate medicine, becomes in succession the victim of the numerous band of empirics who are continually boasting that they alone have the specific. We would simply ask, why do such cases occur? and in whom are they found? and, if we can fathom the cause, we thereby suggest the scientific remedy. In the first place we may remark, that the chronic ulcer is never found but in the leg, and most commonly low down on or near the ankle. It is chiefly found in the labouring population, who are many hours daily in the erect position, and often in those who, from frequent child-bearing, cramp, or other cause, suffer from varicose veins. This seems to prove that the primary and chief cause of the intractable character of such sores is the imperfect state of the circulation through the part, and therefore, whatever other methods are adopted, the chief aim should be to obtain a

healthy circulation. This once accomplished all else is comparatively easy and unimportant. The first and obvious mode of placing the lower limb in this respect on a par with the rest of the body is, a permanent adherence to the recumbent posture strictly enforced night and day. A change may speedily be seen to occur, and if a sufficient time be obtained, and some simple application be made, the sore will almost invariably heal. There are, however, two objections to this plan: one is, the extreme difficulty there is in obtaining and enforcing perfect rest for many weeks to one in other respects active and healthy, and fit for work; the other is, the extreme tendency there is in a wound healed by rest to relapse on the resumption of active habits.

Another mode of carrying out the same principle is, by giving uniform and complete support to the entire limb from the toes to the knee, applying at the same time such dressing as may suit the wound; this support may be accomplished by means of careful bandaging, the bandage being about seven or eight yards long, two inches and a half wide, and made of soft calico; it must be carefully wound up the leg from the toes to the knee: it requires practice and skill, and is very apt to slip; this may be sometimes obviated by applying two bandages, one over the other the reverse way. But the most complete mode of carrying out this principle of mechanical support is by means of the adhesive bandage or strapping. This should be composed of the simple Emp. Plumbi spread on soft calico cut into strips, two inches wide, and about fourteen inches long; these should be warmed and carefully applied, each piece overlapping the other about one-third from the toes to the knee, and changed, especially over the wound, every second or third day. It has the advantages of removing swelling and indurated edges, restoring a healthy circulation, producing creamy pus and florid granulations, and enabling the patient during the treatment to pursue his usual avocation. Properly understood, and skilfully carried out, it constitutes one of the greatest triumphs of modern surgery.

We should fill a volume with even the enumeration of the applications that have been lauded for ulcers; they are all more or less stimulating, and are either mineral or vegetable. I will just mention those I have found useful in modifying the state of the sore. If it be very foul, though chronic, and a fresh surface is wanted, I have found the red precipitate powder, or pulvis hydrarg. nit. oxyd. sprinkled over the surface accomplish this. The lotio nigra, formed by calomel and lime-water, is often useful, also a solution of the nitrate of silver or sulphate of copper. An ointment composed of the red precipitate is sometimes useful. One vegetable ointment only I would mention, in very old indolent sores, as of some value, — the ung. resinæ. Some of these cases are incurable, from the great size they have obtained, or the many years they have existed, and from the age of the sufferer; and we can only soothe and palliate. It has often been urged that it is un-

safe to attempt to heal old ulcers. This risk has been much exaggerated; but where there is any ground for such a fear, an issue in the neighbourhood, or in the arm, will be less painful and inconvenient than the ulcer, and equally serviceable to the constitution.

For further particulars relating to the subject of ulcers, the reader is referred to "Lectures on the Causes and Treatment of Ulcers of the Lower Extremity," by G. Critchett, Esq., Senior Assistant Surgeon to the London Hospital. 1849.

SCALDS AND BURNS.

THE experience of large hospitals amply demonstrates that there are no class of accidents of more frequent occurrence, whose history is more tedious and uncertain, that maims and disfigures more frightfully, or that swells the bills of mortality more extensively than scalds and burns.

The importance of these accidents depend upon two circumstances. First, The extent of surface involved in the injury, and, secondly, the depth to which the soft parts are implicated and destroyed.

A fatal effect may result either from the sudden shock communicated to the nervous system, or from congestion and subsequent inflammation of internal organs, or from an exhausting suppurative process gradually expending the vital powers.

Burns and scalds may be conveniently classified according to the effect produced upon the injured part:—1. Simple inflammation of the skin or erythema; 2. Blistering of the cutis or vesication; 3. Destruction of the cutis or true skin, which may be more or less complete; 4. Destruction, not only of the skin, but of the tissue beneath; 5. In some rare cases a limb or feature may be entirely deprived of vitality. These various effects depend either upon the length of time that heat has been applied to a part, or upon the degree of heat so applied; and this latter circumstance is regulated by the nature of the substance applied. Thus, for example, metals in a state of fusion produce far more severe effects than boiling water. The various effects I have described may exist in different parts of the same burn or scald, according to the intensity and duration of the heat that has been applied. The constitutional effects of scalds and burns vary according to the extent and degree of the injury, and the age and powers of the patient. The primary result of such an accident upon the system is depression or collapse. The surface is cold, the pulse weak and low, the breathing slow and laboured, and the brain oppressed; if the patient does not sink in this condition, reaction gradually takes place, and a febrile state supervenes, the internal organs give evidence of disease, the bronchial tubes are irritated and inflamed, and the patient is annoyed by a constant cough; the lungs are also occasionally involved, producing some distress in breathing. At a later period there

often occurs a distressing symptom, viz., obstinate diarrhœa, caused by ulceration about the neighbourhood of the duodenum, and during protracted suppuration hectic fever frequently occurs. Of course these constitutional effects materially interfere with and modify the progress of the local injury, which otherwise obeys in all respects the laws of the inflammatory process. The milder forms are only important from their extent and from their constitutional effects. As these subside the local symptoms rapidly pass away. When there is destruction of parts, they gradually separate and become replaced by new tissue. Here, if a large surface is involved, the cicatrizing process is often exceedingly tedious, and the subsequent contraction most difficult to obviate and to remedy.

We may now briefly consider the subject of treatment of scalds and burns. A strong impression seems to prevail in the public mind, and, to a certain extent, in the medical profession, that there is something peculiar and specific about the class of injuries we are now considering, to which the ordinary laws of surgery are not applicable. Hence it is that so many individuals, who are quite uninformed upon this and, indeed, most other subjects, have yet their specific nostrum for burns and scalds, altogether irrespective of their nature, extent, or constitutional effects; and this prevails most, as might be expected, where ignorance is most profound. Nor is the public altogether to blame for this idea. Medical men of considerable experience have, from time to time, published works on this subject, advancing methods of treatment altogether at variance with the laws of scientific surgery, and justifying their views by referring to the success of their plan;—a success which must have been due rather to that strong inherent curative power of nature triumphing over difficulties, and healing in spite of, rather than because of the treatment adopted. The idea of specifics and the endless variety of nostrums that result therefrom belonged to the infancy of our art, and tended very much to complicate and impede its early efforts: but as science has progressed, surgery, while it has multiplied its powers, and has effected great results, has very materially simplified its means and appliances, and, by discarding a host of specifics, and carrying out a few scientific principles, and simply co-operating with the curative powers of nature, has escaped altogether from the region of empiricism. These remarks apply in a special manner to the injuries we are now considering: we have heard so much of specifics for scalds and burns that it is difficult at first altogether to discard them from the mind, and apply the same simple rules of treatment that belong to inflammation and its results in general; and yet there is nothing in the nature of a scald or a burn that exempts them from the laws that regulate the treatment of other inflammatory processes, and it is only when we consider the subject in this light that we can obtain clear, satisfactory, and scientific views upon treatment.

We may first consider the local treatment of scalds and burns. In the first two divisions, viz., that in which simple inflammation of

the skin or erythema is produced, or where vesication is threatened or has taken place, if the surface involved is not so extensive as to produce serious constitutional effects, the chief indications are to allay pain, which is usually a prominent symptom, and to arrest inflammatory action at the point at which we find it, and gradually to subdue it. These results are best obtained by the constant abstraction of heat, so as to keep down the temperature of the part. This may be accomplished in various ways; if the position of the part will permit, it may be conveniently done by immersion in cold water frequently changed so as to keep down the temperature, or, where this is impossible, by the constant application of cold water to the part. This method may be unremittingly persevered in so long as pain, heat, and inflammation remain. It accomplishes the double purpose of allaying pain and of keeping down inflammatory action. If vesication have not occurred, it may often in this way be prevented. It should be had recourse to immediately on the receipt of the injury, and the benefit derived from it will be in proportion to the shortness of the interval between the time of receiving the injury and making the application. In this way the effects of a slight scald or burn may be speedily removed without the formation of any blister or wound. When the cold ceases to give relief it must be discontinued, and the part simply protected by means of lint or cotton wool. Where vesication has occurred the blister must be punctured, and the cuticle left as a covering to the part, some mild ointment, as the Ung. Zinci, being also applied with a view chiefly of excluding atmospheric air. In all minor cases of burns, and, indeed, in many of the severer forms, it is very desirable to effect this object. Exposure to atmospheric influence increases the pain and interferes with the favourable progress of the case; and a great variety of contrivances have been had recourse to with a view of accomplishing this result, more particularly in those cases in which the cuticle is extensively destroyed and removed, and also in those very painful instances in which the cutis vera or true skin is partly implicated, the nerves of the skin being exposed and irritated, and the granulating process very imperfectly set up. Various methods of accomplishing this object have been recommended; cotton-wool, flour, oxide of zinc powder, a solution of gum, oil, and other bland applications having the same property, viz., that of excluding atmospheric influence, have been in favour with different writers. The objection to powder of any kind is that it dries, becomes hard, cracks, and thus becomes a source of pain and irritation; and when once on it is difficult to remove. Some bland and soft material, such as olive or almond oil, or mucilage, or glycerine, answers the purpose best.

In those cases in which there is extensive destruction of soft parts, in the early stages the constitutional is more important than the local treatment; the chief object of the latter must be to soothe and to promote the separation of the slough. Warm water applied through the medium of flannel or lint, and maintained in a moist

state by oil silk, and frequently renewed, is a light soothing application, and usually affords relief to the more distressing symptoms. When the surface is very painful, powdered opium dissolved in the water, in the strength of a drachm to two pints, sometimes gives relief. So soon as discharge commences and the slough begins to separate, a soft well-made poultice answers better than the warm water, absorbs the discharge, and promotes separation of the slough. If the discharge is offensive, a solution of the chloride of lime, about a drachm to the pint of water, added to the poultice corrects the fetor, and promotes healthy action. When the slough has quite separated, an ordinary granulating sore remains, which must be treated upon general principles. The chief points of difficulty are frequently the great size of these wounds, and the constant tendency to contraction during the process of healing. Water dressing may be resumed and continued so long as the healing process goes on favourably. When, however, the surface becomes dry, or the granulations become flabby or exuberant, some change must be made. Some astringent lotion, as a weak solution of the nitrate of silver, or sulphate of zinc or copper, about five grains to the ounce, may be substituted. If still no progress is made, ointments may be used, as zinc ointment, red precipitate ointment, resin ointment, &c. These must be changed at least once daily, and may be varied as their effect ceases to be beneficial. Strapping and bandaging sometimes may be used with advantage, but only when the sore is conveniently placed, and not too large. Practically it will be found that the healing goes on very fast at first; but as the new skin increases in quantity, its reproductive power diminishes, and the progress becomes proportionately slow, and even may cease altogether, and remain stationary for months and even years. Moreover, the newly-formed cicatrix will readily give way on the slightest local or constitutional irritation. Thus it is that the progress of the case becomes exceedingly tedious, wearing out the strength of the patient and the resources of the surgeon. Where the sore is in the vicinity of joints, or where the skin is loose, there is a constant and almost irresistible tendency to contract, which may destroy the utility of a limb, or distort the neck and face to a fearful extent. Every effort must be made to obviate this. Splints must be fixed to limbs, and the head must be placed forcibly back; but in spite of every effort and the best directed skill, contractious and abnormal adhesions will sometimes occur, and the question arises, as to the practicability and feasibility of attempting to relieve them by surgical interference. On this point there exists great difference of opinion; but the prevailing, and, we think, most rational view, is that the best directed operative skill is unavailing, and therefore injurious, and that, except in a few rare cases, nothing should be attempted beyond mechanical stretching of the parts, which, if persevered in, and combined with friction, may accomplish considerable benefit. The constitutional treatment of burns involves much careful watching

and frequent modification throughout the progress of the case. In the early stage there is usually great depression, collapse, and a tendency to coma. If, therefore, we are tempted to give opium internally to allay the severe pain, it must be done with great caution, or we increase these dangerous symptoms. Stimuli may be given in this stage, but with caution, as we expect speedy reaction. The febrile symptoms must be subsequently carefully controlled, with as little depletion as possible, as we need all our resources for the cicatrising process. The diarrhœa, that is often so obstinate, as it depends upon ulceration, is but little under control. During all the later stages of the case, a liberal diet and a fair amount of stimulus may not only be allowed, but must be strongly urged. The period at which severe burns are usually fatal is very shortly after the accident.

HERPES.

MODERN nosologists define by the word Herpes an eruption of vesicles which are dispersed here and there over the skin, following a regular course of increase, maturation, and decline, and limited in duration to a period of a few weeks.

The fluid contained in the vesicles is at first colourless, but in process of time assumes a milky and opaque appearance, and either dries up and falls off in scurf, or, discharging, becomes converted into a scab which, when detached, exposes a reddened surface. In some instances, however, ulcerations proceed from these vesicular eruptions. The crops of vesicles usually appear in rapid succession — in clusters situated upon an inflamed base, and accompanied with heat and tingling, and the ordinary symptoms of febrile disturbance of the system. Several varieties of the affection may be observed.

1. *Herpes Phlyctænodes*.—A miliary form of the disease in which the vesicles are very small and transparent, and arising in successive crops. This form is frequently found on the face and neck; sometimes the extremities and occasionally the entire trunk become liable to its invasion. "The included lymph sometimes becomes milky or opaque in the course of ten or twelve hours; and about the fourth day the inflammation round the vesicles assumes a duller red hue, while the vesicles themselves break and discharge their fluid or begin to dry and flatten, and dark or yellowish scabs conerete upon them. These fall off about the eighth or tenth day, leaving an irritable surface, which slowly regains its healthy appearance. As the successive elusters go through a similar course, the termination of the whole is not complete before the thirteenth or fourteenth day."*

2. *Herpes Zoster*.—An eruption of vesicles most commonly

* Martinet's Pathology, p. 353.

found partly encircling the waist like a semi-girdle, and popularly known under the name of The Shingles. The vesicles are small, often pearly in appearance, and surrounded by a red margin. They frequently dry up and exfoliate; as often become confluent, broken and scabbed, and occasionally are productive of small and troublesome little pits or ulcers. Shingles usually attacks the young, and is most commonly met with in the warmer portions of the year. It is in no way contagious, and is ordinarily an affection of little or no moment.

Herpes circinnatus, of which we shall speak hereafter. *Herpes labialis* and *præputialis* are other varieties of the vesicular affection.

The causes of Herpes may be referred to a want of cleanliness, a low diet, and a damp situation; but certain constitutions seem, nevertheless, particularly predisposed to herpetic eruptions.

The best remedies for these eruptions are ointments prepared from the oxide of zinc*, the white precipitate of mercury, or a small quantity of hydrargyri bichloridum and lard, making use at the same time of lotions somewhat of a similar nature with those recommended in psora; or as here prescribed†, being somewhat similar to the nostrum sold under the name of Gowland's lotion. I have frequently found a strong decoction of the fresh leaves of digitalis to be a very good wash for herpetic eruptions of a troublesome and extensive nature. The following, which is a powerful sedative application, has been employed with success in herpes and other inflammatory complaints of the skin. Mix one drachm of Prussic acid with six ounces of elder-flower water, and use this lotion twice a-day.

Where the disease is inveterate, it may be necessary to have recourse to the internal use of medicine, such as the pills of

* R₃ Zinci Oxydi, ʒss.
Adipis Præparat. ʒj. M.
ft. Unguentum.

Vel,
R₃ Unguent. Hydrarg. Præcipit. Alb.

Vel,
R₃ Unguent. Hydrarg. Nitratis.

† R₃ Amygdal. Amar. Decort. ʒij.

Contunde in mortario marmoreo, dein
benè terens gradatim adjice
Aq. Distillat. Oj. et cola.
Liquori colato adde

Hydrarg. Bichlor. gr. xij. in

Spiritus Rectificat. f. ʒij. prius
solut. M.

ft. Lotio.

* Take Oxide of Zinc half a drachm.
Prepared Lard, one ounce.
Mix them.

Or,
Take Ointment of the White Precipitate of Mercury.

Or,
Take Ointment of the Nitrate of Mercury.

† Take Bitter Almonds, blanched, two ounces.

Bruise them in a mortar, then gradually add

Distilled Water, one pint.

Strain the liquor, and make an addition to it of

Bichloride of Mercury, twelve grains,

Which has been previously dissolved in Rectified Spirit, two drachms.

Mix them together for a lotion.

calomel and antimony*, a solution of hydrargyri bichloridum, the liquor arseniealis in the dose of six drops three times a-day, increasing it gradually to twelve or fifteen; a decoction of elm-bark, sarsaparilla, or guaiacum, or the mineral acids†, together with a vegetable and milk diet, at least avoiding all salted meats. Some gentle aperient may be taken occasionally.

A severe case of herpes lately came under my observation, which had resisted various means, but which was at last perfectly removed, in a comparatively small period, by giving the patient twenty drops of the aqua chlorinei internally three times a-day, gradually increasing the dose; using at the same time frequently throughout the day a lotion composed of two drachms of the solution of potass in a pint of water. Its strength was at last augmented to three drachms.

The effects of a tepid bath in promoting the natural excretions by the skin render it very serviceable in curing herpetic eruptions; indeed in all cases of cutaneous foulness it will be found a most important auxiliary to internal remedies. A bath prepared from, or saturated with, the sulphuret of potassium has been employed with great success in the cure of herpes.

TINEA, OR SCALDED HEAD.

THIS disease consists in a chronic inflammation of the skin of the head, productive of a secretion of matter, peculiar in its nature,

* R. Calomel.
Antim. Sulphuret. Præcip. aa ʒj.

Guaiac. Gummi Resinæ, ʒij.

Bals. Copaib. q. s. M.

Fiant Pil. lx. Capiat j.—iij. omni nocte
horâ decubitûs.

Vel,
R. Pilul. Hydrargyri,
Pulv. Antimonial. aa gr. ij.

Opii, gr. ss.
Syrup. Simpl. q. s. M.
ft. Pilula, omni nocte sumenda.
† R. Acid. Sulphuric. f. ʒij.

Aq. Fontan. f. ʒjss. Post efferves-
centiam adde

Syrup. Simpl. f. ʒij. M.
Capiat f. ʒj. vel f. ʒij. bis terve in die ex
Aque Puræ cyatho.

* Take Calomel.
Precipitated Sulphur of Anti-
mony, of each one drachm.
Guaiacum Resin, in powder two
drachms.
Balsam of Copaiba, a sufficiency
to form the mass.
Let sixty pills be made out of this, of
which from one to three may be taken
every night at bed-time.
Or,
Take Mercurial Pill,
Antimonial Powder, of each two
grains.
Opium, half a grain.
Syrup, a sufficiency to form a
pill, which is to be taken every night.
† Take Sulphuric Acid, two drachms.
Add gradually
Pure Water, one ounce and a
half.
After the effervescence has ceased, make
an addition of
Common Syrup, two drachms.
Mix them. Of this let the patient take
from sixty to one hundred and twenty
drops twice or thrice a-day in a tea-
cupful of water.

and capable of propagating the complaint, if applied to the scalp of a healthy subject. At first the eruption is confined, probably, to only a small portion of the head; but by degrees its acrimony is extended to the neighbouring parts, and at length the whole of the scalp is eroded, and beset with a scabby eruption. Dr. Willan has substituted the term *porrigo* for that of *tinea*, as being less objectionable; and considers this genus as consisting of several varieties.

These varieties Rayer has classed into four: viz. *Tinea favosa*, *annulare*, *granulata*, and *mucosa*.

The first variety, according to the same author, "is characterised by very small pustules, the summits of which soon become converted into yellow, very adherent crusts depressed into a cup-like shape." The second variety (*annulare*), or ring-worm, is marked by the circular arrangement of the groups of the contagious pustules. In well-marked cases of this affection the circles gradually extend; the thickened fluid forms hard crusts, and the hair falls off to a greater or less extent.

Tinea granulata presents no regularity in the invasion of the pustules. The head becomes covered with irregular powdery yellow scabs, which produce baldness of the affected part.

Tinea mucosa is identical with the *crusta lactea* of Willan. The pustules of this variety are very small, and ultimately discharge a fluid, which dries and forms yellowish crusts. It is supposed to differ from the above forms in its non-contagious character.

Children are principally affected with *tinea*, particularly those of the poor; hence it evidently arises from uncleanness, from the want of a due proportion of wholesome nutritive food, and possibly from bad nursing. At any rate, these will very much aggravate the disease. In many instances it is propagated by contagion, either by using a comb imbued with the matter from the head of a person labouring under it, or by putting on his hat or cap.

When proper means are early adopted, the disease seldom proves difficult of cure.

The treatment consists in shaving the head close, and afterwards covering it with an ointment made of sulphur and pitch, or bichloride of mercury and pitch, previous to the daily application of which*, it may be washed with a little of either of the

* R Picis Liquid. Oss.
Cere Flav. ʒss.
Sulph. Loti, ʒij. Solv.
ft. Unguentum.

Vel,
R Unguent. Picis Liquid. ʒij.
Hydrargyr. Bichlorid. gr. vj. M.
ft. Unguentum.

* Take Tar, half a pound.
Yellow Wax, half an ounce.
Washed Sulphur, two ounces.
Mix them over a fire.
Or,
Take Tar Ointment, two ounces.
Bichloride of Mercury, six grs.
Mix them.

lotions* here advised. If these should fail, we may substitute astringent or stimulating applications, paying a cautious attention at the same time to the general health. As a covering for the head we may use the oiled-silk cap.

In those scurfy eruptions of the head which are observed in children, and when a thin ichor pervades the cuticle and excoriates the parts, the application of a little of either of the ointments marked thus† will be found of considerable utility, and will indeed seldom fail of effecting a radical cure. It should be applied every night, covering the parts with a bladder or linen, and again be washed off in the morning with soap and water.

In the cure of tinea capitis, cutting off the hair as close as possible, well washing the parts with warm soap and water, and afterwards sprinkling them pretty thick with powdered charcoal night and morning, has proved very efficacious.

For the removal of tinea capitis many of the French surgeons, after applying emollient applications to remove the scabs, have then recourse to shaving the head, which is repeated every two or three days, applying daily an ointment composed of the hydro-sulphuret of potass: others, after the application of a poultice, resort to an ointment made of caustic potass, mixed with lard or oil, which in a few days makes the hairs fall off, or allows them to be pulled out with little force and without pain. When the hairs

Vel,

℞ Unguent. Pic. Liquid. ℥j.
 ——— Hydrargyr. Nitratis. ℥ss.
 M.

* ℞ Tabaci, ℥ij.
 Aq. Fontan. Oj. eoq. ad Oss. et
 colaturæ adde

Liquor Potassæ Carb. f. ℥j. M.

ft. Lotio.

Vel,

℞ Potassii Sulphuret. ℥ss.
 Liquor Calcis, Oj.
 Liniment. Saponis Comp. f. ℥j. M.

ft. Lotio.

† ℞ Hydrargyr. Præcipitat. Alb. ℥j.

Plumbi Acetatis, ℥ss.
 Unguent. Hydrargyr. Nitratis, ℥ij.

Unguent. Picis, Liquid. ℥iij. M.

ft. Unguentum.

Vel,

℞ Adipis Præparat. ℥j.
 Æruginis,
 Hydrargyr. Præcip. Alb. āā ℥j. M.

ft. Unguentum.

Or,

Take Tar Ointment, one ounce.
 Ointment of Nitrate of Mercury,
 half an ounce.

Mix them.

* Take Tobacco, two drachms.
 Pure Water, one pint.
 Boil it down to half a pint, strain off the
 liquor, and add to it
 Solution of Carbonate of Potass,
 one drachm.

Mix them for a lotion.

Or,

Take Sulphuret of Potass, half an oz.
 Lime Water, one pint:
 Compound Soap Liniment, one
 ounce.

Mix them.

† Take White Precipitate of Mercury,
 one scruple.
 Acetate of Lead, half a drachm.
 Ointment of the Nitrate of Mer-
 cury two drachms.

Tar Ointment, three ounces.

Mix them.

Or,

Take Prepared Lard, one ounce.
 Subacetate of Copper,
 White Precipitate of Mercury, of
 each one scruple.

Mix them.

have been removed by the caustic application, and the cure effected, they grow plentifully again. The hairs are only taken off by the caustic application in those patches where the tinea exists.*

Besides these external applications, it may sometimes be necessary to administer alterative medicines† at the same time. The doses must be varied according to the age, constitution, &c. of the patient; and if acidity abounds in the primæ viæ, some absorbent—such as the creta præparata, or magnesiæ carbonas, according as the bowels may be more or less affected—should be combined. In all cases the body ought to be kept open. The occasional use of a tepid bath might probably be of some service.

The eruption in tinea has been known to give way to the internal use of sulphuric acid where only wheat flour has been applied externally. It is said to have been frequently cured likewise by testaceous powders alone; two materials very different in their chemical properties, but agreeing in their power of promoting cutaneous absorption.

If the glands of the neck should happen to swell on the head becoming dry, we ought to advise the insertion of an issue in the neck, or the occasional application of a blister to it.

The diet in tinea capitis should be wholesome and nutritive, avoiding salted meats and fish.

* See Sketches of the Medical Schools of Paris, by Mr. J. Cross.

† ℞ Magnesiæ Carb. gr. xij.

Calomel. gr. ss.

ft. Pulvis, horâ somni sumendus.

Vel,

℞ Antimon. Sulphur. Præcipit. gr. j.

Calomel. gr. ss.

Cretæ Præpar. gr. v. M.

ft. Pulvis, mane et nocte capiendus.

Vel,

℞ Calomel. ʒss.

Pulv. Antimon. gr. xv.

Opii Purificat. gr. x.

Syrup. Simpl. q. s. M.

Fiant Pilulæ xxx. quarum sumat æger j.

vel. ij. omni nocte horâ decubitûs.

† Take Carbonate of Magnesia, twelve grains.

Calomel, half a grain.

Mix them, and let this powder be taken every night at bed time.

Or,

Take Precipitated Sulphur of Antimony, one grain.

Calomel, half a grain.

Prepared chalk, five grains.

Mix them. This powder is to be taken morning and night.

Or,

Take Calomel, half a drachm.

Antimonial Powder, fifteen grains.

Opium, ten grains.

Syrup, a sufficiency.

Mix them, and divide the mass into thirty pills, of which let the patient take from one to two every night on going to bed.

PSORA, OR THE ITCH.

THE itch is evidently confined to the skin, and rarely affects the general system, however great its irritation.

It arises most usually from infection communicated by coming into immediate contact with the body of a person already affected, or by wearing the same clothes, or lying in the same bed-linen that he has done; but it is sometimes produced by unwholesome food, impure air, and a neglect of cleanliness. Those who reside in a cold, mountainous situation seem particularly predisposed to it: hence these united causes make it a disease of very frequent occurrence among the Highlanders of Scotland.

The itch shows itself in small pimples about the fingers, wrists, hams, and waist, which, after a short time, become so many pustules, and are attended with such an itching as to occasion a constant desire to scratch. When they break, the acrid fluid which they contained falls on the neighbouring parts, and thereby spreads the disease over almost the whole body, if proper remedies are not used to check its progress. Where the pustules are very large, and attended with much inflammation, they are apt to run into boils.

Considerable discussion has arisen among practical authorities, whether an insect termed, by Raspail, *Sarcoptes hominis*, and by the majority of writers *Acarus Scabiei*, is the cause or effect of this disease. This parasite, belonging to the class *Arachnidæ* or Spiders, although mentioned by Avenzoar in the 12th century, and described in later times by Linnæus, Fabricius, Latreille, and others, was not studied in connection with Psora until the year 1812, when M. Gales made a number of experiments at the Hospital St. Louis, which seemed to demonstrate it to be the contagious principle of the itch. The very recent observations made by M. Bourguignon* forcibly strengthen that view. The last-mentioned writer has not only discovered the male and female acari, but has carefully observed their habits. He says that the males exist to the females in the proportion of one to ten; that the female about to become a mother burrows under the skin by aid of her mandibles, and lays four eggs at a time; that the young one comes forth from the shell in ten days in the form of larvæ with six legs, and that in a few days they throw off their skin and acquire eight legs. M. Bourguignon has also found that the female never leaves her nidus in the day, but will crawl about most actively from one person to the other during the night, at which period the itch is usually caught from individuals sleeping together; that she will run about the skin and deposit her eggs in those parts of the bodies which are most delicate and most free from hairs. And he accounts for the existence of papulæ, vesicles, &c., where the acarus cannot be found, to the effects of a morbid poison introduced by the insect in the parts which have been attacked by it. This diligent observer has

* *Traité Entomologique et Patholog. de la Gale de l'Homme.*

also made numerous experiments with regard to the best mode of destroying the parasite. An ointment composed of sulphur, carbonate of potash and lard killed the insects in five days. Iodide of sulphur and iodide of potassium in solution killed them in eight minutes, but induced considerable irritation of the skin. A solution of stavesacre extract, however, appeared equally effectual in destroying these parasites, without inducing any unpleasant consequences to the part applied. Hence M. B. recommends an ointment prepared "by digesting for twenty-four hours over the vapour bath three parts of stavesacre powder in five parts of lard, and straining the product while liquid. Four days of friction will destroy the insects and cure the eruption; while with sulphur ointment seven days are necessary."*

The remedy which has enjoyed the greatest popularity in the cure of this disease is undoubtedly sulphur, which is not only used externally in the form of ointment—as in the unguentum sulphuris simplex, or that of the unguentum sulphuris compositum, which is more powerful,—but is sometimes also given internally. As its external use, although very efficacious, is however attended with much inconvenience, from the dirtiness of its application, as well as its disagreeable smell, other remedies are frequently substituted. The most efficacious of these are a solution of bichloride of mercury†, different combinations of the sulphuric acid‡, white hellebore§, and a strong decoction of digitalis. In some cases of psora,

* Monthly Journal of Med. Science, July, 1852.

† R₃ Hydrargyr. Bichlorid. gr. iv.
Ammon. Hydrochlor. gr. x.
Aq. Distillat. f. ℥xij. M.
ft. Lotio.

Vel,
R₃ Hydrargyr. Bichlor. gr. x.
Ovi unius Vitellum.
Adipis Præpar. ℥ij. M.
ft. Unguentum.

‡ R₃ Acidi Sulphurici, ℥ss.
Adipis Præparat. ℥j. M.
ft. Unguentum.

§ R₃ Veratri Pulv. ℥j.
Adipis Præpar. ℥iv. M.
ft. Unguentum.

Vel,
R₃ Rad. Veratri Contus. ℥j.

Aq. Puræ, Oij.
Decoque ad libram unam, et liquori frige-
facto et collato adde,
Spirit. Rectif. f. ℥ij. M.
ft. Lotio, frequenter utenda.

Vel,
R₃ Decoct. Veratri, f. ℥xij.

Hydrargyr. Bichlorid. gr. vj.
Ammoniaë Muriat. ℥j.
ft. Lotio.

† Take Bichloride of Mercury, four grains.
Hydrochlorate of Ammonia, ten grs.
Distilled Water, twelve ounces.

Mix these for a Wash.

Or,
Take Bichloride of Mercury, ten grains.
The Yolk of an Egg.
Prepared Lard, two ounces.
Mix these into an ointment.

‡ Take Sulphuric Acid, half a drachm.
Prepared Lard, one ounce.
Mix them, and use this as an ointment.

§ Take Powder of White Hellebore, one ounce.
Prepared Lard, four ounces.
Mix them for an ointment.

Or,
Take White Hellebore Root, bruised,
one ounce.
Pure Water, two pints.
Boil them down to one pint, and add to the
strained liquor when cool,
Rectified Spirit, two ounces.
Mix them, and use this lotion frequently.

Or,
Take Decoction of White Hellebore,
twelve ounces.
Bichloride of Mercury, six grains.
Muriate of Ammonia, one drachm.
Mix them for a lotion.

I have succeeded by employing merely a weak infusion of tobacco as a lotion two or three times a-day.

Dr. Christison strongly recommends a wash made of chloride of lime as a most efficacious and cleanly substitute for sulphur.

Besides the bichloride, other preparations of mercury have been employed with success, as in the formulæ specified below.* Should any of these occasion heat, rash, or other effects of too powerful a stimulus applied to the skin, they are to be relieved by substituting a little plain lard instead of the ointment; and this application is to be continued until the troublesome symptoms are perfectly removed.

That species of the itch which consists in small ulcers in the skin is sometimes cured by an internal use of the sulphuric acid, which increases the cutaneous absorption. If its internal use fails, it may be employed externally mixed with lard, whereby a very elegant ointment is formed. The external application of sulphur, mercury, and acrid vegetables acts on the same principle.

Such as are afflicted with the itch should be debarred the use of high-seasoned dishes, salted meats, fish of all kinds, and heating liquors; their diet consisting principally of vegetables and milk, with a small proportion of animal food. They should shift their linen frequently, and pay the greatest attention to cleanliness. When the unguentum acidi sulphuriei is used, the parts to which it is applied should be covered with flannel instead of linen, on account of the destructive effects of the acid on vegetable substances.

Fumigation has also been employed at Paris, by Dr. Gale, with success, in the cure of psora, and this mode he prefers to all others, particularly in very bad cases. The fumigation is produced by throwing half an ounce of sulphur mixed with two drachms of nitre into a warming-pan of hot coals, which is to be employed in the usual manner of warming a bed. The patient is then to strip

* R₃ Hydrargyr. Præcipit. Alb. ʒj.

———— Submur. ʒss.

Sulphuris Loti, ʒij.

Adipis Preparat. ʒij. M.

ft. Unguentum, omni nocte horâ decubitûs applicandum.

Vel,

R₃ Hydrargyr. Præcipitat. Alb. ʒij.

Plumbi Acetatis,

Potassæ Carbonat. aa gr. x.

Adipis Preparat. ʒij.

Essent. Bergamot. mxx. M.

ft. Unguentum.

* Take White Precipitate of Mercury, one drachm.

Submuriate of Mercury, half a drachm.

Washed Sulphur, two drachms.

Prepared Lard, two ounces.

Mix them, and let some of this ointment be rubbed in every night about bed-time.

Or,

Take White Precipitate of Mercury, two drachms.

Acetate of Lead,

Carbonate of Potass, of each ten grains.

Prepared Lard, two ounces.

Essential Oil of Bergamot, twenty drops.

Mix them for an ointment, and use it in the same manner as the former.

naked and get under the clothes, which are to be closely tucked round his neck and shoulders, so as to prevent as much as possible the escape of the gas. The process is continued about seven nights; and even the worst cases may be cured in this way, Dr. Gale says, without any inconvenience to the patient, who will usually sleep soundly.

OF THE RING WORM.

UNDER the term Ringworm are comprehended two different affections, the one of a vesicular, and the other of a pustular origin, respectively called *Herpes Circinnatus* and *Tinea Annulare*; the latter has been already described under the article "*Tinea*."

Herpes Circinnatus is a cutaneous disease, chiefly occupying the scalp, but sometimes other parts of the body, and arises most frequently from coming much in contact or using the same comb, cap, or hat with those already affected by it: but in some habits there seems a predisposition to it. It is a disorder more frequently met with in warm climates than in cold ones, is of a very contagious nature, and in inveterate cases is very difficult to eradicate.

It shows itself in small red pimples, which break out in a circular form, and contain a thin acrid fluid. When the body is heated by exercise, these itch intolerably, and upon being scratched discharge their contents, which, by falling on the neighbouring parts, spread the disease to a considerable degree. The original size of the circle formed by the pimples is usually about that of a sixpenny piece: but in process of time it will become, by neglect, as large as the palm of the hand.

In some cases the disease is so universal that the habit becomes tainted; the skin puts on a leprous appearance, is much disfigured with blotches, and the unhappy patient enjoys not a moment's ease, from the intolerable itching and painful excoriations.

Where the disease is not of an inveterate nature, it may easily be removed by washing the parts affected with some kind of restringent lotion*; and where this fails, recourse may be had to the wash composed of Prussic acid mixed with elder-flower water, or other remedies advised for the cure of herpes. In all impetiginous affections, Prussic acid (being a powerful sedative), properly diluted, is a very efficacious remedy for allaying the tingling and itching, which prove so highly distressing. The application of mushroom catsup to the pimples is reported to be a very efficacious

* R₂ Zinc. Sulphat. 3ss—5j.

Plumbi Acetatis, gr. xv.
Aq. Distillat. f. 5vj. M.

* Take Sulphate of Zinc, half a drachm
to a drachm.

Acetate of Lead, fifteen grains.
Distilled Water, six ounces.

Mix them for a wash.

remedy. A poultice of the flowers of the ringworm bush, French guayava tree (*cassia alata*), is much employed in the West India islands, as are also lime-juice and gunpowder.

It seldom happens that an internal use of medicine is necessary. Where the disease is very inveterate, some gentle alterative, such as the *pilul. hydrargyr. chlorid. compos.*, with a decoction of the woods, may probably be most proper. — See “*Herpes*.”

The ring-worm generally appears on the head in a small circle of redness, which increases in diameter by degrees, and contracts a branny scurf, the hair separating at the roots from the slightest touch. After one circle has made its appearance, other similar circles may be expected soon to show themselves, till they reach one to another, and at length occupy the whole of the scalp. Unless proper means are resorted to in time, glandular swellings in the neck will ensue, and sometimes ulcerations.

When the scalp is much affected, the treatment to be adopted should be to shave the head every four or five days; to bathe it twice or thrice a-day with a lotion of the sulphate of zinc or copper; and to apply every night a little of either the unguentum *hydrargyri nitratis* or *ungent. hydrarg. præcip. albi*, washing this off again the next morning with warm water and soap and a bit of flannel. In inveterate cases, where glandular swellings or ulcerations attend, we may advise alteratives internally, such as calomel.

ACNE, OR BLOTCHED FACE.

ACCORDING to Dr. Willan's arrangement, acne belongs to the Order of Tubercula, and the genus is characterised by an eruption of distinct, hard, inflamed tubercles, which are sometimes permanent for a considerable length of time, and sometimes suppurate very slowly and partially. They appear on the face, especially on the forehead, temples, and chin, and sometimes also on the neck, shoulders, and upper part of the breast; but never descend to the lower parts of the trunk, or to the extremities. As the progress of each tubercle is slow, and they appear in succession, they are generally to be observed at the same time in the various stages of growth and decline; and in the more violent cases are intermixed with the marks and vestiges of those which have subsided. The eruption occurs mostly in persons of the sanguine temperament, and in the early part of life, from the age of puberty to thirty or thirty-five. It is common to both sexes, but the most severe form of it is seen in young men.

Dr. Willan has noticed four varieties of this eruption, which he designates by the titles of *acne simplex*, *punctata*, *indurata*, and *rosacea*.

The *acne simplex* is an eruption of small pimples, which appear singly, and are not very numerous, nor accompanied by much inflammation, nor by any intermediate affection of the skin. Many

of the tubercles do not proceed to suppuration, but rise gradually, become moderately inflamed, and again slowly subside in the course of eight or ten days, leaving a transient purplish red mark behind; but others go on to a partial suppuration, the whole process of which occupies from a fortnight to three weeks. The eruption recurs frequently at short intervals in some individuals; but in those who are more predisposed to it, it is more extensive, and, perhaps, never wholly disappears: at uncertain periods it is, however, more or less troublesome. Such persons often enjoy good health otherwise, and cannot refer the cutaneous complaint to any obvious exciting cause.

The affection being generally local, is to be treated principally by external applications; and the most proper are those of a gentle, stimulating nature, such as lotions containing alcohol strengthened or reduced, according to circumstances, by the addition of any distilled water, such, for example, as equal parts of spiritus tenuior and of rose or elder-flower water. If the tubercles are much inflamed, and many of them pustular, the effect of a very acrid lotion would be to render them more confluent, and to produce the formation of a crust of some extent, as well as to excite an inflammatory redness in the adjoining skin.

As the inflammatory disposition subsides, an additional stimulus is often useful, such as from half a grain to one grain, or even more, of the bichloride of mercury dissolved in each ounce of the spirit, or one drachm or more of the liquor potassæ, or of muriatic acid, in six ounces. Diluted acetic acid and the liquor ammoniæ acetatis afford also an agreeable stimulant in proper proportions. Sulphur yields a small portion of its substance to boiling water poured upon it, and allowed to infuse for twelve or fourteen hours, a quart of water being added to about an ounce of broken sulphur. In slight cases a lotion of this nature has been found advantageous, and especially in removing the dusky and roughness in the face connected with the disease.

In delicate constitutions it may be necessary to attend to the state of the digestive functions. These should be promoted by gentle aperients combined with tonics. Sulphur combined with magnesia, or with crystals of tartar, taken at bed-time, will procure sufficient evacuation in the morning. Occasionally we may change the medicine for the carbonate of soda. When the bowels are brought into a healthy state, the dilute mineral acids, with an infusion of cascarilla or calumba, may be taken twice or thrice a-day.

Where the eruption is obviously connected with imperfect or difficult menstruation, the use of a warm salt-water hip-bath will prove highly useful after the application of a few leeches to the insides of the thighs. In such cases, the internal exhibition of the carbonate of soda combined with camphor, or the extractum taraxiei, will be found of considerable advantage.

If the functions of the liver are torpid, the patient may take two grains of the pilula hydrargyri with three of the extract. taraxiei,

at night, on going to bed, with a draught of an infusion of senna and sulphate of magnesia in the morning.

Acne punctata.—In this variety of the disorder the eruption consists of a number of black points, surrounded by a slight border of cuticle. These are vulgarly considered as the extremities of small worms or grubs, because when they are pressed out a sort of worm-like appendage is perceived attached to them, but in reality they are only concreted mucus or sebaceous matter, moulded in the ducts of the sebaceous glands into this vermicular form, the extremity of which is blackened by exposure to the air. In consequence of the distension of the ducts, the glands themselves sometimes inflame and form small tubercles with little black points on their surface, which suppurate partially, as in the foregoing species; but many of them remain stationary for a long period, without ever passing into an inflammatory state.

These concretions may be extracted by pressing on both sides of the specks with the nails, until the hardened mucus is sufficiently elevated to be taken hold of. When the puncta are removed, the disease becomes acne simplex, and requires the same treatment with that species.

Dr. Underwood* has recommended the use of a solution of the carbonate of potass internally in these cases, and Dr. Willan was in the habit of occasionally prescribing chlorine water. One tea-spoonful of this liquid, taken in a glass of water three times a-day, for a considerable period, has sometimes appeared to benefit the health, and improve the colour and smoothness of the skin. Sulphur, magnesia, soda, rhubarb, are likely to prove of much benefit when given internally.

Acne indurata.—The tubercles are larger, as well as more indurated and permanent, in this species, than in acne simplex. They are of a conical conoidal form, and are occasionally somewhat acuminate, as if tending to suppuration, being at the same time of a bright roseate hue; but many of them continue for a great length of time in a hard, elevated state, without any disposition to suppurate. Others, however, pass on slowly to suppuration, the matter not being completely formed in them for several weeks, and then only a few of the tubercles are removed by that process. They are frequently very numerous; sometimes two or three coalesce, forming a large, irregular tubercle, which occasionally suppurates at the separate apices, and sometimes only at the largest. In whatever mode they proceed, the vivid hue of the tubercles gradually becomes purple or even livid, especially in those which show no tendency to suppurate. Upon the suppurating tubercles slight crusts form, which, after a time, fall off, leaving small scars, surrounded by hard tumours of the same dark

* See his Observations relative to Grubs, in his Treatise on the Diseases of Children, vol. ii. p. 157. fifth edition.

red colour, and these sometimes suppurate again at uncertain periods; and sometimes slowly subside and disappear, leaving a purple or livid discoloration, and occasionally a slight depression, which is long in wearing off.

The tubercles, even when they do not suppurate, but especially while they continue highly red, are always tender to the touch; so that washing the face, shaving, the friction of the clothes, &c., produce pain. The disease, in its most severe form, exhibits the eruption nearly covering the face, breast, shoulders, and top of the back, but does not descend lower than the ordinary tippet in female dress.

The general health does not usually suffer even under this aggravated form of the eruption. Many persons, however, who are affected with the eruption, are liable to disorders of the bowels and stomach, and to hæmorrhoids. Its first appearance, too, is frequently ascribed to some irregularity of diet, or to some cold substance swallowed when the person has been overheated, and in a free perspiration. Hence the appearance of the first eruption is not unfrequently somewhat sudden.

By a steady use of external stimulants, combined with a proper regulation of diet and exercise, the acne indurata is often greatly alleviated, and sometimes entirely removed. Even from the beginning the eruption will bear a more acrid stimulus than in the inflamed acne simplex. A spirituous lotion, at first a little diluted, and containing the bichloride of mercury in the proportion of a grain, or somewhat less, to the ounce of the vehicle, is often extremely beneficial. An empirical preparation, vended under the name of Gowland's lotion, which is generally supposed to contain this mercurial salt in an emulsion of bitter almonds, has been much used, and where its strength happens to accord with the degree of irritability in the eruptions, it is, doubtless, beneficial in this species of the disease. Many other stimulants* may be substituted

* R₃ Ol. Amygdal. f. ʒj.
Liquor. Potassæ, f. ʒij.
Aq. Rosæ, f. ʒviss. M.

ft. Lotio ter quaterve in die utenda.

Vel,
R₃ Misturæ Amygdal. Amar. f. ʒvss.
(Vide Herpes.)
Spirit. Camphoræ, f. ʒss. M.

ft. Lotio.

Vel,
R₃ Misturæ Amygdal. Amar. f. ʒvj.
Hydrargyr. Bichlorid. gr. iv.

Solut. in

Spirit. Rosmar. f. ʒj. M.
ft. Lotio partibus affectis ter in die applicanda.

* Take Oil of Almonds, one ounce.
Solution of Potass, two drachms.
Rose Water, six ounces and a half.

Mix them. Let this wash be used three or four times a-day.

Or,
Take Mixture of Bitter Almonds (see Herpes), five ounces and a half.
Camphorated Spirit, half an ounce.

Mix them for a wash.

Or,
Take Mixture of Bitter Almonds, six ounces.
Bichloride of Mercury, four grains.

Dissolved in

Spirit of Rosemary, one ounce.
Mix them. Let the parts affected be washed with a little of this lotion three times a-day.

with a similar effect. In general it will be found requisite to augment the activity of all these applications in the progress of the treatment, partly in consequence of the diminished effect of an accustomed stimulus, and partly on account of the increasing inertness of the tubercles, as the inflammatory state subsides, which must be determined by the appearances.

Frequent purgatives, which are often resorted to, are of no advantage, but, on the contrary, only tend to augment the disease in feeble habits. The copious use of crude vegetables in diet, which the misapplication of the term "scurvy" has introduced, is likewise to be deprecated, as well as the free use of vegetable acids, especially in constitutions predisposed to indigestion. It is a fact not easy to explain, that under many modifications of cutaneous inflammation, especially about the head and face, inflammation is immediately increased, in sympathy with the offended stomach, when these substances are taken. In cases of *aene indurata*, the diet should be good, light, and nutritious, but not stimulating, consisting of animal food, with well-dressed vegetables, and the farinacea, wine and fermented liquors being omitted, or taken with great moderation.

Internally medicines are generally supposed to effect very little, but in some inveterate cases an increased amendment* has been observed, when, in addition to the external treatment already noticed, small doses of soda, sulphur, and antimony†, were at the same time administered; and by which plan, duly persevered in, the skin has been perfectly cleared.

Acne rosacea.—This species of *aene* differs in many respects from the preceding. In addition to an eruption of small, suppurating tubercles, there is also a shining redness, and an irregular granulated appearance of the skin in that part of the face which is affected. The redness commonly appears first at the top of the nose, and afterwards spreads from both sides to the cheeks. At the commencement it is not uniformly vivid, but is paler in the morning, and readily increased to a deep and intense red after dinner, or at any time, if a glass of wine or spirits be taken, or

* See Dr. Bateman's Practical Synopsis of Cutaneous Diseases, p. 288. third edition.

† R. Sulphur. Loti, ʒss.
Sodæ Carbon. ʒj—ʒss.

Antimon. Tartarizat. gr. ʒth. M.

ft. Pulvis mane nocteque sumendus.

Vel,

R. Sodæ Carbon. gr. xxv.

Sulphur. Loti, ʒij.

Pulv. Antimon. gr. j. M.

ft. Pulvis bis in die adhibendus.

† Take Washed Sulphur, half a drachm.
Carbonate of Soda, from one scruple to half a drachm.
Tartarised Antimony, the sixth of a grain.

Mix them. This powder is to be taken morning and night.

Or,

Take Carbonate of Soda, twenty-five grains.

Washed Sulphur, two scruples.

Antimonial Powder, one grain.

Mix them, and take this powder twice daily.

the patient be heated by sitting near the fire, or by active exercise. After some continuance in this state, the texture of the cuticle becomes gradually thickened, and its surface uneven or granulated, and variegated by reticulations of enlarged cutaneous veins, with smaller red lines stretching across the cheeks, and sometimes by the intermixture of small, suppurating tubercles, which successively arise on different parts of the face.

Acne rosacea does not often occur in early life, except where there is a great hereditary predisposition to it: in general it does not appear before the years of five-and-thirty and forty; but it may be produced in any person by the constant immoderate use of wine and spirituous liquors. In such cases the greater part of the face, even the forehead and cheeks, is often affected, but the nose especially becomes tumid, and of a fiery red colour; and in advanced life it now and then enlarges to an enormous size, the nostrils being distended, or the alæ fissured; as it were, divided into separate lobes. At this period of life, too, the colour of the *acne rosacea* becomes darker and more livid; and if suppuration takes place in any of the tubercles, they are apt to put on an unfavourable appearance, and do not readily assume a healing disposition. *Acne rosacea* very frequently co-exists with a diseased liver, and generally indicates a congested and obstructed state of that viscus.

In young persons, however, who are hereditarily predisposed to this complaint, irregular, acrid patches not unfrequently appear in the face, which are often smooth and free from tubercles, and sometimes throw off slight exfoliations at intervals. If great temperance both in food and drink be not observed, these patches may be gradually extended until the whole face assumes a preternatural redness.

No danger, and but a trifling inconvenience, accompanies *acne rosacea*, but those afflicted with it are usually solicitous to have it removed. For this purpose strong restringents and sedatives, such as a solution of the *plumbi acetate*, are often employed; but although these succeed in repressing the eruption, they are apt to aggravate the internal disorder, and to give rise to severe headache and other unpleasant complaints. Moreover, the stimulants which are beneficial under proper regulations in most of the other forms of *acne*, are generally prejudicial in this, by greatly aggravating it. Where restringents are applied externally to the patches of reticulated veins, such only as very dilute spirituous or acetous lotions, with or without a small proportion of the acetate of lead, or simple ointments combined with alum, acetate of lead, &c., in very small quantities, should be used.

The perfect cure of this species of *acne* is seldom accomplished; for, whether it originates in a strong hereditary predisposition, or from habitual intemperance, the difficulties in the way of correcting the habit of body are nearly insurmountable. The regulation, however, of the diet is important in both: when the stomach or

liver is disordered, the symptoms may sometimes be palliated by the liquor potassæ or other antacids, such as soda, &c., which seem also to have some influence in lessening inflammatory action in the skin. It will be advisable to keep the bowels regular and open by some gentle laxative, if they are torpid. A slight course of the calomel, joined with antimony, as in the pilulæ hydrarg. chloridi comp., with a decoction of sassafras, elm-bark, or dulcamara, might in some cases possibly prove serviceable. Along with these we may make a trial of sulphureous mineral waters, and occasionally of sulphureous fumigating baths. The liquor arsenicalis has sometimes been found beneficial; the patient may begin with eight drops twice a-day, gradually increasing the dose to fifteen or twenty.

Should a severe headache, impaired sight, or other ill effects arise from a recession of the cutaneous eruption in consequence of restringents being applied externally, the insertion of an issue of one or two peas between the shoulders might be advisable.

CHIGRE.

THE chigre is a kind of small sand-flea, which proves very troublesome in the West Indies, by insinuating itself into the soft and tender parts of the fingers and toes more usually than into other parts of the body, particularly under the nails, where it continues to increase in size, causing no farther pain than a disagreeable itching and heat. In process of time, however, a small bag or bladder is formed, in which are deposited thousands of nits or ova, that become so many young chigres, and, if not speedily extracted, create running ulcers. Some people have lost their limbs by amputation, nay, even their lives, by having neglected to root out these vermin in proper time.

The moment, therefore, that an itching, redness, and heat, more than usual, are perceived in any part affected with a chigre, it will be advisable to extract it. This is usually done with a sharp-pointed needle by some dexterous negro, who picks out the insect, and if a cyst is formed, endeavours to take out this whole also; for, by breaking it, troublesome ulcers are sometimes formed. The cavity is then usually filled up with tobacco ashes or snuff.

In very inveterate cases, where from neglect either the hands or feet are much beset with chigres, it may be necessary, after the extraction of the several cysts, to wash the parts with a strong decoction of tobacco, or a solution of the sulphate of copper.

PERNIO, OR CHILBLAIN.

CHILBLAINS are painful inflammatory swellings, of a deep purple or leaden colour, to which the fingers, toes, heels, and other extreme parts of the body, are subject on being exposed to a severe degree of cold. The pain is not constant, but rather pungent and shooting at particular times, and an insupportable itching attends. In some instances the skin remains entire, but in others it breaks and discharges a thin fluid. When the degree of cold has been very great, or the application long continued, the parts affected are apt to mortify and slough off superficially, leaving a foul, ill-conditioned ulcer behind.

Children and old people are more liable to be troubled with chilblains than those of a middle age; and such as are of a scrofulous habit are remarked to suffer severely from them.

The best mode of preventing these affections is to avoid with much care any exposure to wet or cold; wherefore those who are subject to them should be cautious, on the approach of winter, to cover the parts which are apt to be injured with woollen gloves and stockings, and not expose their hands or feet too precipitately, when cold, to a considerable degree of heat.

In common cases of chilblains, as soon as any part is perceived to be affected, it will be proper to rub it well with warm spirits of rosemary, to which a small addition of oil of turpentine has been made; after which we may apply pieces of soft linen, moistened with camphorated spirits, or any of the embrocations here advised*, and they are to be kept on constantly.

When the swellings break and discharge a thin matter or ulcerate, poultices and emollient ointments may be applied for a few days; but as these are apt to induce fungous excrescences

* R. Aluminis, ʒij.
Acid Acetici, dilut.
Spirit. Tenuior, āā Oss. M.

Vel,
R. Liniment. Camph. C.
Liniment. Saponis, āā f. ʒss.

Ol. Terebinth. f. ʒiij. M.

Vel,
R. Liniment. Sapon. Comp. f. ʒjss.
Tinct. Cantharidis, f. ʒij. M.

Vel,
R. Liniment. Sapon. Comp.
Liquor. Ammon. Acetat. āā f. ʒj.
M.

* Take Alum, two drachms.
Distilled Vinegar,
Proof Spirit, of each half a pint.
Mix them.

Or,
Take Compound Camphor Liniment,
Soap Liniment, of each half an
ounce,
Oil of Turpentine, three drs.
Mix them.

Or,
Take Compound Soap Liniment, one
ounce and a half.
Tincture of Spanish Fly, two
drachms.
Mix them.

Or,
Take Compound Soap Liniment,
Solution of Acetate of Ammonia,
of each one ounce.
Mix them.

over the sores which it will be difficult afterwards to remove, they should not be persisted in long. The occasional application of caustic to the edges, and dressing the sore daily with the unguentum hydrargyri nitratis, will effectually prevent any luxuriance of granulation. Should this be found of too escharotic a nature, its strength may easily be reduced, by a small addition of the unguentum cetacci.

DISEASES NOT REFERABLE TO ANY PARTICULAR CLASS.

VERMES, OR WORMS.

THE human body is principally infested with three kinds of worms; viz. the ascarides, or small white worm; the teres, or round worm, resembling in its aspect the common earth worm; and the tænia, or tape-worm, which is flat. The last is, however, more rarely met with in this country than the others; but in Germany and Switzerland the inhabitants are much troubled with it. Different situations of the intestines have been mentioned as being in general occupied by each kind, particularly the rectum and colon as the seat of the ascarides, where they are observed always involved in mucus; the teres usually occupy the small intestines, and sometimes the stomach; the tænia, the whole intestinal tube, more especially the ilium. The last-mentioned worm is often very long, extending in many cases to twenty feet, and consists of many joints, which when detached from each other have somewhat the appearance of gourd seeds, and have erroneously been supposed each to possess a kind of independent life. The teres or round worm is usually from ten to fifteen inches long, and is rarely found alone, but is frequently numerous. The intestines of children are more apt to be infested with them than adults, or those advanced in life. The ascarides somewhat resemble pieces of thread, are about half an inch in length, of a yellowish white colour, and have a very quick motion.

Unwholesome food, with a bad digestion, seems to be the principal cause of worms. They appear most frequently in those who are dyspeptic or of a relaxed habit, and whose bowels contain a preternatural quantity of mucus or slimy matter. Hence it is a disease most common to children; but they sometimes prevail in adults to a very high degree, particularly in those who live chiefly on a vegetable diet. The tape-worm is not often met with in infancy or childhood; instances of it do, however, now and then

occur. Some physicians entertain the opinion that intestinal worms do not arise from a weak or impaired digestion, and a consequent combination of matter capable of converting itself into such worms, but that they are introduced into the human body mixed with the food or drink, and find in the intestines an appropriate place for their existence. The origin of intestinal worms is, therefore, involved in obscurity and doubt.

In general, worms may readily be distinguished by the following symptoms; viz. variable appetite, fetid breath, acid eructations, and pains in the stomach, grinding of the teeth during sleep, picking of the nose, paleness of countenance, hardness and fulness of the belly, slimy stools, with occasional griping pains, more particularly about the navel, heat and itching about the anus, short, dry cough, emaciation of the body, slow fever, with evening exacerbatations, and irregular pulse, and sometimes convulsive fits. It sometimes happens, however, that there is much difficulty in making an accurate diagnosis between the symptomatic *nervous* affections brought on by worms and genuine hydrocephalus: in some cases the two diseases exist together, standing probably in the relation of cause and effect to each other.

It is often a very difficult matter to expel worms from the body, but more especially the *tænia*. When they prove fatal, it is by their erosion of particular parts, or their inducing a tabid state.

In the cure of this disease we must have in view, first, the effecting the destruction and discharge of the worms; and, secondly, the preventing their future generation.

The first of these is to be accomplished by certain remedies known by the name of vermifuges, which all act in one of the three following ways:—

1st, By simple evacuation or purging, as mercury, rhubarb, jalap, and aloes; as also the different strong bitters, as rue, tansy, and wormwood.

2dly, Mechanically, as the pulvis stanni, cowhage, &c.; or

3dly, Dynamically, as oil of turpentine, kousso, &c.; and chemically, in altering the fluids in which the worms are involved.

We may begin with those which act mechanically*, and which have been found the most powerful; and after continuing them

* R. Stanni Limatur.
Confect. Cassiæ, āā ʒss.

Syr. Simpl. q. s. M.
ft. Electuarium, ejus sumat magnitud.
nucis moschatae, bis in die.

Vel,

R. Dolichi Spicul. gr. vj.—x.

Limatur. Stanni, gr. x. M.
ft. Pulvis, mane et nocte capiendus cum
syrupo, aut melle permixtus.

* Take Filings of Tin,
Cassia Confection, of each half an
ounce.

Syrup, a sufficiency.

Mix them. Of this electuary the bulk of
a nutmeg may be taken twice a-day.

Or,

Take the Down of Cowhage, from six to
ten grains.

Filings of Tin, ten grains.

Mix them. This is to be taken night and
morning, mixed with a little syrup or
honey.

for two or three days, we may have recourse to those which have a purgative effect*, should the two former fail in procuring a discharge of the worms. Purgatives, in spite of their debilitating effects, are of great importance in all worm cases, as they free the intestinal canal from that load of mucus in which the worms lodge, and this perhaps is thrown out in some measure as a defence against them; but which, there is reason to apprehend, greatly interferes with the process of digestion, and tends to counteract the due action of tonic remedies.

Should those which act mechanically assisted by purgatives and tonics not answer after a fair trial, we may then employ those which act dynamically and chemically.† Along with those which act mechanically it will be proper to employ some kind of bitter infusion‡ from time to time.

If all these means prove ineffectual, we may then make use of the Indian pink-root, or spigelia, which has on many occasions been found a very powerful medicine. About ten grains of the powder may be given morning and night to a child of eight or ten years old, to which age the doses of the preceding remedies are adapted. The spigelia is, without doubt, a poisonous and narcotic

Vel,
℞ Dolichi Spicul. gr. vj.—x.
Mel. Optim. vel. Theriac. q. s. M.
ft. Bolus bis in die adhibendus.

Vel,
℞ Dolichi Spicul. ʒj.
Syrup. Simpl. q. s. M.
ft. Electuarium. Capiat cochl. minimum
primo mane et nocte per dies tres.

* ℞ Hydrargyr. Chloridi gr. iij—v.
Pulv. Rhei, gr. x. M. ft. Pulvis.
Quarto mane sumendus.

Vel,
℞ Pulv. Jalapæ, gr. x.
Hydrargyr. Chloridi gr. iij. M.

Vel,
℞ Olei Ricini, f. ʒss—ʒj. pro dos.

† ℞ Liqueur Caleis, Oss in die.

‡ ℞ Rad. Gentian Contus.
Fol. Absinth.
— Rutheæ,
Cort. Limon. aa ʒij.
Aq. Ferventis, Oj.

Macea per horam, et cola. Hujus infusi
sumat cochl. magna iij. bis terve in die.

Or,
Take the Down of Cowhage, from six to
ten grains.

Honey or Treacle, a sufficiency to
form a bolus, which is to be given
twice a-day.

Or,
Take Down of Cowhage, one drachm.
Common Syrup, a sufficiency.
Form an electuary, of which take a tea-
spoonful every morning and night for
three days, on an empty stomach.

* Take Calomel, three to five grains.
Powdered Rhubarb, ten grains.
Mix them. This purgative powder is to be
taken on the fourth morning after any
of the preceding vermifuge medicines.

Or,
Take Powder of Jalap, ten grains.
Calomel three grains.
Mix them for a cathartic.

Or,
Take Castor Oil, from half an ounce to
one ounce for a dose.

† Take of Lime Water, half a pint in
a-day.

‡ Take Gentian Root, bruised,
Wormwood Leaves,
Rue Leaves,
Lemon Peel, of each two drs.
Warm Water, one pint.

Infuse them for an hour, and then strain
off the liquor. Of this infusion three
table-spoonful may be taken twice or
three a-day.

vegetable, and it is, in all probability, by virtue of this poisonous quality, that it proves so beneficial in cases of worms.

By a proper use of cowhage (the *Dolichos pruriens* of Linnæus), with calomel combined with jalap, or the oleum ricini, every third or fourth morning as a purgative, we seldom, however, shall have occasion to seek relief from any other medicine, as in several hundred cases where I had used it, during my practice in the West Indies, I never knew it once to fail. It appears to have been but lately introduced into this country, which, considering its wonderful vermifuge powers, is somewhat surprising.

The stizolobium, or dolichos, is a plant like the vine, long, slender, and creeping. The leaves thin, pointed, and covered with a down. The flowers grow in clusters, and are followed by a pod, somewhat similar to the common pea in shape and size, and containing several purple beans. The pods are thickly covered by a very fine, stiff-pointed down, similar to hairs, which, upon being applied to the skin, produces an intolerable itching, and it is only this downy portion of the plant that is employed to destroy worms.

A decoction of the *Geoffræa inermis*, or cabbage-bark, is another remedy much used in the West Indies, but more particularly in Jamaica, for destroying worms, and often with a very happy effect.

For the destruction of ascarides, it is very usual to throw up injections into the rectum that will prove obnoxious, and thereby dislodge them. Any of those recommended below* may be tried. Turpentine has been used also with success in the form of clyster. About two drachms of the oil, blended with a decoction of oatmeal, may be thrown up at a time: an injection of the down or hairy part of the dolichos, mixed in a little thin gruel, might possibly

* R₃ Liquor. Calc. tepid. f. ʒx. pro enema.

Vel,

R₃ Fol. Rutæ,
—— Absinth. āā ʒss. Coq. ex

Aq. Puræ, Oj. ad ʒx.

Colat, adde

Ol. Ricini, f. ʒss. M.

ft. Enema.

Vel,

R₃ Dolichi Pubis, gr. x.

Decoet. Avenæ, f. ʒvj.

ft. Enema.

Vel,

R₃ Aloes Vulgaris Extraet. ʒj.

Decoet. Avenæ, f. ʒx.

Vel,

R₃ Tabaci, ʒj—ʒss.

Aq. Fervent. ʒx.

Post semihoram col.

* Take Lime Water of a tepid warmth, ten ounces for an injection.

Or,

Take Rue Leaves,

Wormwood Leaves, of each half an ounce.

Boil them in a pint of water, until reduced to ten ounces, strain off the liquor, and add Castor Oil, half an ounce.

Mix them for a clyster.

Or,

Take Down of Cowhage, ten grains.

Thin Gruel, six ounces.

Mix them for a clyster.

Or,

Take Common Aloes, one drachm.

Thin Gruel, ten ounces.

Mix them for a clyster.

Or,

Take Tobacco Leaves, from one scruple to half a drachm.

Warm Water, ten ounces.

Infuse them for half an hour, and then strain off the liquor for a clyster.

have a very good effect. Dr. Darwin proposed the introduction of a piece of candle up the rectum, well smeared with mercurial ointment, as a likely method to destroy ascarides.

A peculiar mode of employing tobacco in cases of worms has been recommended by Dr. Barton*, and which, we are informed by him, has in many instances produced very happy effects. The leaves are pounded with vinegar, and applied in the shape of a poultice to the region of the stomach or abdomen. "In consequence of this application, worms are often discharged," he mentions, "after powerful anthelmintics have in vain been administered internally." A similar practice I know is adopted in the West Indies, where it is usual to apply a cataplasm of the expressed juice of the aloe-tree to the abdominal region, for the purpose of dislodging worms, and I have observed that in many cases the remedy seemed to prove a powerful auxiliary to other means. Its efficacy has extended, however, only to cases of the round worm.

The male fern, or flax mas, which forms the basis of Madame Noufler's celebrated remedy, is a medicine which has been much extolled for its destructive powers to the tape-worm, which, of all others, proves the most difficult to expel from the body. The dose for an adult is from one to two drachms. After two doses, it will be right to give a purge of the submuriate of mercury and jalap, in about the proportion of five grains of the former to five-and-twenty of the latter.

The oil of turpentine is often administered with a very good effect in many cases of worms, but more particularly in those of the tania, having caused many feet in length of the animal to be brought away or expelled. For a delicate female the proper dose will be an ounce; for a robust female or small man, an ounce and a half; and for a robust man, two ounces. The best vehicles for it appear to be milk and thin gruel. It should be taken early in the morning on an empty stomach. Purging will be produced by it, and this speedily. When the dose is considerable, it may be advisable to direct the patient to drink plentifully of emollient liquors, with the view of sheathing the stomach and kidneys.

To guard against the absorption of the remedy into the system, it is usual to combine it with an equal quantity of castor oil.

The pomegranate root has also been found a very efficacious remedy† for destroying the tape-worm.

Sulphureous waters, such as those of Harrowgate, in this country, and of the islands of Jamaica and Nevis, in the West Indies, have been found, when drank upon the spot, to be very good anthelmintics.

Harrowgate water is a safe and powerful remedy against the round worm and ascarides, when taken in such a dose as to prove

* Reported in vol. viii. p. 428, of the Medical and Physical Journal.

† See Edinburgh Medical Journal for January, 1807.

a brisk purgative ; and, in the latter case, when used likewise as a clyster, the ascarides being chiefly confined to the rectum, and therefore within reach of this form of medicine.

Common salt was administered by Dr. Rush as an anthelmintic remedy, with some success ; and by some other physicians it has been thought to possess a power destructive to worms. Those who do not make use of it with their food, have been observed to be much predisposed to these vermin.

Perhaps, however, the most efficacious vermifuge is the Abyssinian remedy, kousso, or the dried flowers of the *Brayera anthelmintica*. According to Dr. Pereira, this remedy is a true vermicide, as it expels the worms in a dead state. "In one case," says this author, "it brought away ten worms, of which one only manifested signs of vitality, and that for a few minutes only." A handful of the dried flowers, or about half an ounce, may be considered as the dose for an adult, and should be taken in the morning fasting, the evacuation of the bowels being promoted by a mild purgative.

Such as are afflicted with worms should abstain from all crude vegetables and unripe fruits, making their diet consist chiefly of animal food that is light, nutritive, and easy of digestion. They should keep up a regular action of their bowels.

After a proper course of the vermifuge medicines which have been advised, we should employ such others as have a tendency to strengthen the stomach and intestines, in order to prevent any worms from being generated in future ; a relaxation of these parts being a constant attendant on the disease. The most proper tonics are the cinchona bark, astringent bitters, and chalybeates ; various forms of which will be found under the head of *Dyspepsia*. The general system is at the same time to be strengthened by daily exercise in the open air, and by employing cold bathing when the season admits of it.

VENENA. POISONS.

• WITHOUT entering upon a consideration of the various definitions which have been given of the term poison, we shall at once state that which appears to us the most appropriate, and which we have for some years been in the habit of employing in our lectures on *Toxicology*.

A poison is a substance which, applied externally or received internally into the human body, produces injury, or even death, and which does so by some action not known to be purely mechanical, and independently of any particular temperature, or state of concentration belonging to itself.

It will be seen that, in describing a poison as a substance, that is, as material, we exclude such agents as heat and electricity, since it would be an unusual and unnatural use of the term to say that a person was poisoned by fire, or lightning. Again, the term

poison would have no distinctive meaning if the power of mechanically injuring the frame were to entitle a body to this designation; since there is no substance in existence which may not in this way give rise to imminent peril, and even to death. Thus air admitted into the veins, or cavity of the pleura, water arresting the ingress of air into the lungs, as in drowning, food which has entered the windpipe, a rope, a stick, a knife, anything, in short, which is capable of producing strangulation, contusions, or wounds, would, but for this limitation, be included. Most, if not all, modern toxicologists are agreed in rejecting mere mechanical agents from their list of poisons. Again, it is evident that water, oil, and many other substances would find a place in our catalogue if their effects, when raised to the point of boiling, were to entitle them to admission. The condition of extreme concentration is so analogous to that of high temperature, either of them being a superadded or accidental property not affecting the essence of the substance itself, that we have long considered it as insufficient to justify the application of the term poison to such agents as may be rendered innocuous by dilution alone. We propose, however, to treat of some of these under the head of spurious poisons. The majority of the poisons with which we are acquainted are hurtful alike to men and animals; but we have here noted their baneful influence upon the human frame as our criterion of the poisons to be described, omitting those, if any there be, which are injurious only to some or other of the lower orders of animals. This distinction was long ago insisted upon by Dr. Gordon Smith; and the same author very properly remarks, that those substances are to be considered as poisons which are generally hurtful, although habit may have produced a tolerance of their use in particular individuals; while others are not constituted poisons by the fact that idiosyncrasy, in certain rare examples, renders them deleterious. Thus opium must rank as a poison, although it is said that the English opium eater could take nine ounces of laudanum daily with impunity; whilst mutton must be denied a place in the same class, even though a person mentioned by Dr. Prout had severe vomiting and purging whenever she ate a morsel of it. Some consideration of quantity enters into the older descriptions of a poison; thus it has been said, that the term should be restricted to such substances as are injurious when taken in small quantity. It is remarkable that M. Orfila still retains this antiquated expression, and nevertheless tells us that there is nothing absolute, nothing which admits of precise determination in the words small dose. Dr. A. Taylor argues at some length against this limitation of the term poison, and justly remarks, that where death is caused by the substance taken, the quantity required to kill cannot be made a ground for distinguishing a poisonous from a non-poisonous body.

The classification of poisons now generally adopted is that which arranges them in the three great divisions of Irritants, Nareotics, and Nareotico-Acrids.

Those substances come under the head of irritants whose sole or chief action is seen in the production of a manifest local and structural injury, as indicated by the irritation, inflammation, corrosion, or disorganization of any of the tissues or organs.

The term narcotic is here used in a wider sense than the derivation of the word (from *ναρκη*, stupor) may seem to justify.

Those poisons are classed as narcotics which primarily and exclusively disturb the functions of the brain or of the spinal marrow, or of both these nervous centres. These, unlike the irritants, occasion little or no structural change in any part.

The narcotico-acrids are those bodies which unite the properties both of the irritants and narcotics. Their action is marked by some amount of local injury, and they also act directly on the cerebro-spinal system.

Irritant actions are of two kinds, which, although differing in many important particulars, have not, as it seems to us, been sufficiently distinguished by writers on toxicology. Thus, in one kind, the irritant action is manifested by a direct local injury; that is, by some structural change in the parts with which the poison is brought into immediate contact. This action we propose to designate by the epithet *acrid*, and we conceive it to be an accidental property of the bodies possessing it, dependent upon the state of concentration in which they have been employed, not upon any essential quality of the poisons themselves. An acrid action is indiscriminating; that is to say, takes effect equally on all parts provided no protecting barrier, as the cuticle, be interposed; nor does its seat vary for different poisons. The other irritant action is that which declares itself by a remote local injury; that is, by the inflammation or other structural change in parts to which the poison is not immediately applied. Now this we call a specific irritant action, its nature and seat being determined by the nature of the poison employed. There is here something like selection, since the same poison does not exert its specific irritant action upon distant parts equally or indifferently, but on those only which are proper to it. In this respect, as well as in the laws which govern them, specific irritant actions are nearly allied to narcotic actions, while they both differ widely from merely acrid actions.

An acrid action is possessed by most of the bodies usually classed among the irritant poisons, and it is the only hurtful action belonging to many of them. Now this acrid action is in all cases weakened or annihilated by the dilution of such bodies as exert it; hence substances endowed with no other hurtful property may be thus rendered harmless. Such bodies do not fall within our definition of poisons; but, in accordance with common custom, we shall describe the most important of them, under the head of Spurious Poisons.

Spurious poisons are liable to be absorbed, but their injurious actions are not dependent on their absorption. It may be doubted whether they can enter the circulation in such state or quantity as

to cause injury. The injection of strong acids into the veins affords no criterion of the action of the same acids when they enter the blood, after introduction into the stomach.

For the right understanding of the *modus operandi* of poisons, as far as this admits of explanation, it will be best to examine separately, first the action of such as are exclusively irritant, and, next, of such as have only a narcotic power. If we can throw any light upon these distinct and strongly contrasted actions, a tolerably correct notion will be obtained of the effects of those poisons, whether narcotico-acrids or others, in which these two different actions are variously combined.

The irritant poisons have a double action, or rather what we may conceive to be two successive actions, though separated by no perceptible interval of time. These actions we shall distinguish as primary or local, and secondary, consecutive, or constitutional.

Of the primary or local actions there are the two kinds spoken of just above, the one direct, produced by an acrid power of the poison; the other remote, resulting from a specific irritant property.

The direct local action is set up, as we have seen, in the part or organ to which the poison is immediately applied, or with which it remains in contact. This direct local action belongs to all or almost all irritant poisons, and in a very conspicuous degree to those which we have named acrid or spurious poisons. Thus the strong mineral acids and alkalies, when swallowed, corrode, dissolve, or inflame the mucous membrane of the mouth, throat, and stomach, wherever they rest upon it or touch it. Common salt, and nitrate of potass in large quantities, and in strong solution, produce intense inflammation of the stomach and lower bowels. Arsenic, corrosive sublimate, cantharides, and many other substances, inflame and disorganize the tissues to which they are directly applied. All of these then afford examples of direct local actions; and such are the only local actions which belong to some of them as to the strong acids and alkalies, to common salt, and others which we denominate spurious poisons; while another, which we call a remote local action, is observed in such as arsenic, corrosive sublimate, cantharides and others. Thus Sir B. Brodie remarked that the inflammations of the alimentary canal, which often followed the application of arsenic to external wounds, were no less severe than those which marked its introduction into the stomach. It is well known that corrosive sublimate causes inflammation and ulceration of the gums and neighbouring organs, that it stimulates the secretions of the salivary glands, and sometimes suppresses that of the kidneys altogether, in consequence of its specific irritant powers. Cantharides too are capable of producing inflammation of the urinary organs, as well as of the parts with which they are brought directly into contact. The direct local effects result from the acrimony of the poisons, which manifests itself by chemically corroding and dissolving or physiologically irritating the parts which they touch. The remote local effects follow the absorption

of poisons, and their conveyance in the blood to the organs which are subject to their specific irritant influences. But the remote local effect is not consecutive, or dependent upon the direct. For, if so, the intensity of the former would be in some measure proportioned to that of the latter, whereas the very reverse is the fact, more severe local effects being observed where the direct local effects are insignificant, or absent. Thus a strong arsenical ointment, causing destructive inflammation at the seat of its application, is less likely to be followed by remote local mischiefs than one so weak as to occasion little or no external injury.

We note these facts in order to show that the direct and remote local effects of poisons have no mutual dependence; the conditions of their production are rather antagonistic than co-operative. Each of these effects is a primary result of a distinct poisonous action. The secondary, consecutive, or constitutional effects of irritant poisons are such as result from sympathy of the system at large with the primary local injury. Such sympathetic consequences are not peculiar to the local effects arising from poisons, they may equally follow any serious mischief of wholly different origin, provided there be some correspondence in the two cases between the importance to the economy of the parts affected, and the extent, severity, and suddenness of the injuries inflicted. There is, so to speak, nothing peculiar, or specific, in the connection between the constitutional symptoms and local mischief, in cases of irritant poisoning; nothing different from what might follow a sudden contusion, rent, scald, or other injury of the same parts.

We are wholly ignorant of the manner in which sympathetic influences are propagated, yet there are two conditions which seem necessary in order to prove the existence of sympathy in any particular case. In the first place there must be an ascertainable primary injury of the organ or part which is supposed to create sympathetic derangement in others; for unless this exist, the derangement of those others may be, nay must be, considered as itself primary, and not sympathetic. The heart may, and very frequently does, sympathise in the sufferings of the stomach, but it may, and often does, exhibit similar derangement from causes inherent in itself. The disorder of the stomach, therefore, must be made evident to our senses before we can conclude that the coincident mischief is attributable to sympathy. Now this evidence of a primary local lesion is almost constantly attainable whenever acrid or irritant poisons have been swallowed, whereas in the case of the pure narcotics the evidences of the existence of this primary lesion are by no means satisfactory. Hence it is, that the case of the irritant poisons especially, and in that of the narcotics-acrids only in as far as they are irritant that we consider sympathy to come into operation.

Again, in the second place, we can attribute only to sympathy such effects as arise independently of other manifest causes. It has been said, and probably with truth, that to attribute any effect to

sympathy is nothing but a confession of ignorance; certain it is that if the channel by which one organ acts upon another be clearly discerned we no longer attribute their mutual influences to sympathy. Thus, if an obstruction to the course of the blood through the heart produce congestion of the lungs, this is a mechanical, not a sympathetic consequence of the primary disease. If, again, the secretions of one part be so vitiated as to become poisonous to the system when absorbed, the secondary mischiefs which arise are not properly referred to sympathy. In syphilis it is to absorption not to sympathy that we are wont to attribute the constitutional effects.

In the instances of the mineral acid and alkalies, we find that dilution, which diminishes their local action, diminishes also the constitutional disturbances which they excite, although it facilitates their being absorbed. Hence we refer their secondary effects not to absorption but to sympathy. As to other irritants, it can hardly be doubted that they must have a sympathetic action on the system, proportioned to the local inflammation which they excite: yet the existence of this sympathetic action and its amount are less easily established, because they have a destructive action in consequence of their absorption also.

We have spoken of two conditions necessary to establish the existence of sympathy. We must briefly notice a law which regulates the amount, or intensity of sympathetic disturbances. There appears to be a power of adaptation in the animal economy, by means of which it can gradually accommodate itself to a great amount of injury, if that injury be gradual in its inroad and progress, whereas the utmost derangement is produced if the system be as it were taken by surprise. Hence, the constitutional effect of any severe local mischief is proportioned, not only to the extreme extent and severity of that mischief, but to the suddenness with which it reaches its utmost extent. This is no other than a statement of that law of the living organism which makes it susceptible of what has been termed a shock. Numerous facts might be adduced in proof of this general law, but it is enough to refer to the experiments of Legallois and others, which show, that the movements of the heart may be arrested by crushing any considerable portions of the cerebro-spinal system; whereas it has been proved by Dr. Wilson Philip and his successors, that the whole cerebro-spinal axis may be gradually removed without any such consequence. Yet, that this power of producing fatal depression of the heart's action does not belong alone to injuries of the nervous centres appears, as from many other examples, so also, from the case cited by Dr. Marshall Hall, of a man who had his arm drawn in and violently crushed and torn off by machinery, in whom the action of the heart failed and never rallied; and Sir Astley Cooper, as quoted by Mr. Travers in his work on Constitutional Irritation, says, "Generally, the most severe injuries, by shock to the nervous system, cause death without re-action."

It is in accordance with this law that the irritant actions of

poisons impressed upon the stomach produce death without reaction, without even inflammation, in the most rapidly fatal cases; a more gradual exhaustion, from continued sympathetic irritation, in those of somewhat longer duration; while, in yet more protracted cases, the impairment of the functions of the stomach itself contributes largely to the unfortunate result.

The irritating actions of all poisons have, as their common consequences, a manifest local injury and sympathetic constitutional depression or disturbance; and though the manner in which the local injuries is produced varies for different poisons, yet, with this exception, they differ far less in kind than in degree.

The narcotic actions of poisons, or those that they exert on the cerebro-spinal system, irrespective of such as are the results of sympathy, differ widely among themselves, as well as from those just mentioned.

We proceed to discuss what may be termed the specific actions of poisons as they belong to the narcotics generally, and to those of the irritants which have a specific irritant action. These are manifested at a distance from the point of direct application of the poison, and are therefore rightly termed remote actions; yet, since (as we shall presently show) they are rarely preceded by and never dependent on any others, they must themselves be considered primary, though remote. In this respect they differ from the sympathetic actions of ordinary corrosives or irritants, which are at once remote and secondary.

Now with regard to these actions of poisons, several questions have to be resolved.

Thus, it may be asked, Do they act through the nerves of the part with which they come directly into contact?

Or are they absorbed and mixed with the blood?

Again, supposing them to be received into the current of the circulation, Through what channel do they get there?

Are they taken up and transmitted by the absorbents?

Or are they admitted by imbibition into the veins?

Again, supposing them to be carried into the circulation, In what way do they exert their influence?

Is it by their conveyance in the blood to the very organs which give evidence of their operation?

Or do they affect these organs through the nerves of the inner coats of the bloodvessels into which they are received?

Each of these questions must receive a brief but separate consideration.

1. Do poisons exercise their specific influences through the nerves of the part with which they are brought into contact, without being absorbed into the system?

"It remains to be seen," writes Dr. Christison, "whether distant organs may sympathise with the peculiar local impressions called nervous, which are not accompanied by any derangement of structure." Now, as regards direct local actions, we would re-

mark, that they are by no means generally followed by any specific remote ones. Thus, we see daily tartar emetic as an ointment producing pustular eruption, without giving rise to vomiting or nausea. Cantharides will blister most severely without causing strangury, and croton oil raise a highly inflamed eruption, without causing purgation; while mercury and lead, without occasioning any palpable local excitement or irritation on the skin, produce their specific effects of salivation, or of obstinate colic and paralysis.

It appears, then, that even as respects irritant poisons there is little reason to believe that their specific remote effects are proportioned to, or dependent on, the extent and severity of their primary local actions.

If, then, local effects, in the place of their immediate application, are at times produced by the pure narcotic poisons, this fact affords no presumption that their peculiar general effects are consequences of those local impressions; nay, the facts adduced by Dr. Christison himself suggest an opposite conclusion. Thus, he speaks of the sense of numbness and tingling in the lips and tongue after chewing aconite, as experienced by Sir B. Brodie and himself, and states expressly that it was unconnected with any affection of the general nervous system. Hydrocyanic acid, too, will benumb the fingers without occasioning any general symptoms. Opium applied by Dr. Wilson Philip to the inner coat of the intestine of a rabbit during life immediately paralysed the contractions of the gut without the general system being for some time affected. A like instantaneous local effect followed the application of tincin, by Messrs. Addison and Morgan. And Coullon found one leg of a frog paralysed after thirty-five seconds by immersion in prussic acid, while the other continued perfectly sensible and irritable.

The very facts, then, upon which the occasional existence of the primary local effects of narcotic poisons is based, tend to prove that their remote actions are not consequences of those effects, and the analogy of specific irritant actions confirms this conclusion.

But, again, if the nerves be the medium through which the remote action takes place, the division of the nerves supplying the part to which the poison is applied ought to prevent its action upon distant organs, while that action should take place under all circumstances in which the nervous communication is preserved entire. Now the very reverse of these results has been observed in numerous experiments. Thus, Sir B. Brodie showed that the action of woorara, inserted into the fore-arm of a rabbit, was unaffected by the complete division of every nervous filament in the axilla. Messrs. Delille and Magendie divided all the parts of the thigh of a dog except the crural artery and vein; yet the action of upas tiecté, inserted in a wound in the foot, was as rapid as if the limb had remained uninjured.

On the other hand, the integrity of the nervous communication alone does not ensure the operation of the poison.

Sir B. Brodie, after compressing by a ligature all the parts of

the thigh of a rabbit except the erural nerve, applied woorara beyond the point of constriction without effect. Müller says that if the leg of a frog, attached to the body only by the sciatic nerve, be immersed in a solution of opium, and kept there for several hours, the animal suffers no narcotic effect.

It results from what we have just stated, that these remote actions are probably not consequences of any antecedent local impressions, and that they are certainly independent of the nerves of the part to which the poison is directly applied.

We proceed, then, to the next question, Are poisons absorbed and mixed with the blood?

In proof that many of them are so, we may name several, which, according to Dr. Pereira, have been detected in the blood. Thus, Lead, Copper, Mercury, Arsenic, Antimony, Barium, Cyanide of Potassium, Sulphuretted Hydrogen, Hydrocyanic Acid, Carbazotic Acid, Oxalic Acid, Alcohol, and Camphor, have been discovered in the blood.

Many of these, as well as Meconic Acid, Morphia, and the narcotic principles of Belladonna, Stramonium, and Henbane, have been detected in the urine.

Two very striking experiments afford physiological evidence of the admission of the active principle of another poison, nuxvomica, into the current of the blood.

Thus Magendie cut off the leg of a dog, and then, having restored the continuity of the vein and also that of the artery, by means of quills introduced into their divided extremities, found that nuxvomica inserted in a wound in the amputated limb gave rise to its ordinary effects.

M. Vernière proved, of the extract of this poison, that if it be thrust into the paw of an animal after a ligature has been drawn round the leg, so as to stop the venous without arresting the arterial circulation in the limb, blood drawn from an orifice in a vein between the wound and the ligature, and transfused into another animal, will excite in the latter the usual effects of the poison, and even cause death; while the animal inoculated with the poison will not be affected at all, if a sufficient quantity of blood is withdrawn before the removal of the ligature.

Much other evidence might be adduced confirmatory of the conclusion, that certainly many poisons, and probably all, are admitted into the blood, and pass on in the current of the circulation.

How then are these poisonous matters conveyed into the blood? Are they taken up by the absorbents of the part, whether lymphatics or lacteals? or, do they find a more direct entrance into the capillaries and veins?

Sir B. Brodie found that woorara, introduced into the left hind leg of a dog, produced the ordinary symptoms and death, even when the thoracic duct had been previously tied near its opening into the veins.

Delille and Magendie observed the usual symptoms to follow the

introduction of a decoction of *nux vomica* into the intestine of a dog after every one of the lacteals of the part had been carefully secured and divided.

Legalas reversed the experiment, he tied the blood vessels, or merely the veins of a portion of intestine, leaving its lacteals uninjured, and was unable to kill the animal even in an hour by means of poison introduced into the intestine.

Tiedeman and Gmelin could never detect the colouring matters which they had given to animals, in the chyle of the lacteals and thoracic duct, although these colouring matters were recognized in the blood and urine, and had passed from the stomach into the intestine. The argument from analogy, therefore, comes in support of the influence from the other experiments just adduced, that it is not through the absorbent system, and with the lymph or chyle, but through other channels that poisons are conveyed into the blood.

The permeability of membranes by fluids, as indicated by Messrs. Parrot and Porrett, and subsequently more fully investigated by Dutrochet and Matteucci, offers a ready explanation (now generally admitted) of the mode in which poisonous matters in solution pass into the blood, through the coats of the capillaries and veins. We must refer to the last-named author for a description of the phenomena of endosmose and exosmose, and shall only here remark that the fact, observed especially with regard to oxalic acid, that dilution favours absorption, is in accordance with the general law of the transmission of fluids through intervening membranes, that the less dense passes through to the more dense with a rapidity proportioned to the difference of their densities.

In an experiment of Magendie's, one of the jugular veins of a puppy was laid bare, and separated from the surrounding parts, so that a card could be passed under it. A solution of *nux vomica* was then freely applied to the vein, and caused symptoms of poisoning within four minutes.

Professor Müller concludes, from some experiments of his own, that substances in solution permeate, in detectable quantity, a membrane not covered by epidermis, so as to reach the first layer of capillaries, and thus to enter the circulation, in a shorter time than a second.

We have, then, both the general principle of endosmose, in accordance with which we should expect matters in solution to find a direct entrance into the blood vessels, and experiments to prove that poisons and other substances do find such an entrance, and that very rapidly.

In what way, then, do poisons exert their specific actions?

Is it by their conveyance in the blood to the very organs which give evidence of their operation?

The fact of the admission of poisons into the blood seems almost necessarily to imply their distribution to every part of the body. True it is, that when they have been introduced through the

intestinal canal, the portal system of vessels would have to be passed before their admixture with the general mass of the blood, and it may be true of some, that they are arrested in their course through the liver, or eliminated either there or in their passage through the lungs. But supposing them once to reach the left side of the heart, and to be admitted into the systemic circulation, it seems to us that on mechanical principles there is all but a necessity for their conveyance to every part and organ of the body. This inference is strengthened by our experience of the universal diffusion of the colouring matter of the bile in jaundice, and of glucose in diabetes mellitus. It is supported, moreover, by the detection of many extraneous substances in almost every part and tissue of the body. Thus Orfila writes, in 1842 (*Journal de Chimie Medicale*, p. 339.), "Iodine, sulphuret and nitrate of potash, ammonia, muriate of ammonia, and alum, when introduced into the stomach of dogs, are absorbed and carried to every organ. I have devoted myself to numerous researches, which leave no doubt on this point, and I proceed to show that the same is true of the salts of lead, of bismuth, of tin, of silver, of gold, of zinc, and of mercury." Again, at page 306. of the first volume of his *Toxicologie*, he says that he has submitted to examination the liver, spleen, lungs, heart, brain, and muscles, taken from dogs killed by arsenic, immediately after death, and has constantly discovered more or less of that metal; and at page 483. of the same volume, he says of potassio-tartrate of antimony, that "after introduction into the stomach of men or animals, it is absorbed, and carried to every organ of the animal economy." Mayer, according to Müller, as long ago as 1817, detected ferrocyanide of potassium in the skin, in the fluid of the articular cavities, in the abdominal cavity, in the pleura, pericardium, fat, dura mater, arachnoid, ligaments of the joints, perichondrium, and valves of the heart of animals, after injection into the lungs. It is not asserted of any of these various substances that they are found in equal proportion in different structures, nor of many of them that they circulate in an unaltered state. It is in the liver, according to Orfila and others, that poisons and other matters absorbed from the intestinal canal are to be found in greatest quantity, not probably as a consequence of any mysterious localization of poisons, as imagined by Messrs. Flandin and Danger, but because, as we have above pointed out, the whole poison must first pass through the vena portæ and liver, because the liver is very vascular, and the blood flows slowly through it.

The changes undergone by salts formed of fixed alkalies and vegetable acids, in passing through the system, appear well ascertained, these being converted into carbonates; but our knowledge is very incomplete with regard to the exact composition of albuminates, or compounds formed of metallic salts, as corrosive sublimate, or verdigris, with the serum of the blood. Oxalic acid, according to Dr. Christison, cannot be discovered in the blood, even

after a solution of it has been injected into the veins. We do not contend that in every case poisons reach the organs affected in the same state in which they are taken or administered, but only that it is by their presence in the blood, either in their original or some modified form, or else by some change that they have effected in the blood itself, that they affect the organs to which such adulterated or modified blood is conveyed. The same means, we conceive, which operate under ordinary circumstances in securing the distribution of the chyle or new blood to every portion of the living frame, must, in cases of the introduction of foreign matters, determine their diffusion to a like extent. That it is in consequence of such general diffusion that poisons affect the particular organs which are susceptible of their action, is rendered probable by the experiment of M. Vernière, already quoted in proof of their admission into the blood, as well as by one narrated by Mattencci. In this latter experiment, performed by Panizza, concentrated hydrocyanic acid was placed in an insulated fold of intestine, *all* the blood circulating in which was poured into a single vein, from which it escaped through an artificial opening. But though the acid was found in this blood, which was carefully collected on its exit from the vein, no symptoms of poisoning were presented by the animal. Now these and other such experiments do furnish a strong presumption that poisons must be not only admitted into the blood, but carried onward with it, in order to produce their specific actions. It is now about twenty years since Dr. Addison and Mr. Morgan first broached their theory, which combined the actions of absorption and nervous conduction to explain the specific operation of poisons. According to them, all poisons act through the nervous system, and through the nervous system only; those which cause a direct local injury, producing (as we have explained above) remote effects through sympathy, which is probably due to nervous influence; those which are absorbed acting on distant organs, through the nerves of the inner coats of the blood vessels into which they enter. Now, the hypothesis that it is through the nerves of the lining membrane of the blood vessels that poisons act, seems to us to have no *à priori* probability to recommend it, no analogy to support it, no facts of a positive character to confirm it.

It has little *à priori* probability to recommend it, for independently of its use in this particular instance of poisons, neither anatomists nor physiologists have either recognised or conjectured the existence of such a state of innervation, or of such a condition of extreme sensibility, organic or general, in the interior of blood vessels, as this theory would imply.

There is no analogy to support it, there is no evidence of any parallel effects in what may be considered the most nearly parallel instances. Neither in phlebitis nor in arteritis, neither, that is, in inflammation of the veins involving their lining membranes, nor in that of the lining membranes of the arteries, do we observe evidence

of the extreme sensibility which this theory requires. If in one instance symptoms and death resulted from poison introduced into the jugular vein of an animal, notwithstanding the direct onward course of the infected blood to the heart was prevented by ligature, much doubt is thrown upon the inference that the effect was due to an action on the blood vessels, by the experiments of Vernière, of Panizza, and by a similar one of Mr. Blake, in all of which venous canals of some length were traversed by poisoned blood, without giving rise to any symptoms.

Three other very striking experiments were performed by Dr. Addison and Mr. Morgan, which were long admitted as militating against, and almost disproving the theory of actual contact. In one of these two large dogs of equal size and strength, were held face to face upon a table embracing each other, so that their breasts and necks were in contact, the animals being placed upon their sides. In this position the right carotid of one dog, and the left of the other were uppermost, and when these had been laid bare and cut across, the lower portion of the artery of one dog was made continuous with the upper portion of that of the other, by means of a simple and ingenious apparatus. Under these circumstances it was supposed that the blood of one animal would flow, in part at least, to the head of the other. Upon introducing nuxvomica into a wound in the back of the dog, thus furnishing blood to his companion, the usual violent effect was produced upon him, but, although that effect continued for fourteen minutes, during which time a free circulation appeared to be carried on between them, not the slightest indication of the action of the poison could be observed in the other dog.

In a second experiment, the connection was made between the jugulars of two dogs; and poison inserted in the face of one caused in him the usual symptoms, but none in the dog supposed to receive infected blood from him.

In the first experiment a single intercommunication only between the carotids was made, one cut end in each dog being secured by ligature. In a third experiment a double cross communication between the carotids was made, so that each dog seemed to send a portion of its blood to the head of the other; yet when one dog was inoculated with a solution of strychnine, he alone suffered from the effects of the poison.

That the inoculated dog should in each of these instances die in about the ordinary time is not inconsistent with the theory of contact, since, even if the blood of one carotid was diverted from his system, that of three other vessels of equal magnitude continued to supply the brain. The difficulty is, to account for the escape of the other dog, and this difficulty has been overcome by Mr. Blake, who has shown it to be almost certain that, after the effects of the poison had commenced in the inoculated dog, the force of his circulation would be diminished, so that little or no blood would pass to his companion. Thus experiments devised with much

ingenuity, and executed with great skill, have been shown to be fallacious, and the theory of contact in relation to the specific actions of poisons and medicines, has gained a more general assent than belonged to it, prior to the publication of Dr. Addison's and Mr. Morgan's able and original work. Dr. Christison, writing in 1845, says of the enquiries of these gentlemen, that however ingenious and plausible, they have not stood the test of physiological scrutiny; and further on he adds, that on the whole it may be considered as well established, that probably all, but certainly some poisons, of the kind whose topical action does not consist in causing destruction or inflammation of the textures to which they are applied, produce their remote effects solely by entering the blood, and through its means impregnating the organs, which are acted on at a distance. "Medicines and poisons, properly so called," says Dr. Pereira (fourth edition, 1849, p. 114.), "were formerly supposed to act, not by absorption, but through the agency of the nervous system. In the present state of our knowledge, however, this notion is quite untenable. For while the evidence adduced in favour of the opinion that medicines operate in consequence of absorption almost amounts to absolute demonstration, the arguments in favour of the sympathetic action of these agents are few, feeble, and of doubtful validity."

It results from all that has preceded, that the actions of some of the so-called poisons and medicines show themselves in a local injury or irritation of the parts to which they are directly applied; such local mischiefs being necessarily followed by sympathetic constitutional disturbance, proportioned to the suddenness, extent, and intensity of the local lesion.

Some substances, as the strong mineral acids and alkalies, and others, act injuriously in this way, and in this way only, and these we consider spurious poisons, having an action dependent on concentration, and very analogous to that of mechanical violence or elevated temperature.

Another large class of poisons and medicines are absorbed (chiefly through the walls of the capillaries and veins), into the blood, and conveyed to distant organs, producing their remote effects either directly by their presence, or indirectly by changes they have effected in the blood. Some poisons, as opium and hydrocyanic acid, cause illness and death in this way only, the place of their immediate application being indicated by no mark of injury or irritation. Or again, like arsenic or corrosive sublimate, they may, without causing injury or irritation in the parts to which they are first applied, give rise to inflammation in particular organs, to which they are conveyed in the blood; and these remote disturbances must have their sympathetic consequences. These modes of action we conceive, in either case, to be characteristic of true poisons.

But arsenic and corrosive sublimate have not only these indirect irritant, and other remote actions, but they have also, if sufficiently

concentrated, a direct irritant action resembling that of the spurious poisons; it is not, however, in right of this last, but of their indirect actions, that we denominate them true poisons.

Again, we consider oxalic acid as a true poison, because, besides its direct destructive local action when highly concentrated, it has narcotic influences on the heart and on the brain, when so diluted as to produce no local injury. But we exclude tartaric acid from the list of true poisons, because, though very deadly in strong solution, we believe it to have no injurious action on the economy, when absorbed in a sufficiently diluted state.

The actions of poisons are liable to various modifications, under alterations of conditions, affecting the poisons themselves, the seat of their application, or the subjects of their influence.

As regards the poisons themselves, the particulars most to be noted are their quantity, administration in a single or repeated doses, their solubility, state of aggregation, admixture, or dilution, or of chemical combination.

As regards the seat of their application, great differences arise in the effects of many poisons, according as they are received into the body, the mouth, and alimentary canal, through the lungs, through a wound, through the organs of generation, or through the skin.

Peculiarity of constitution, or, as it is termed, idiosyncrasy, the habitual use of certain poisonous drugs, and the existence of particular diseases, are the circumstances belonging to the recipient, which are wont to influence their effects.

First. Of the circumstances affecting the poisons themselves.

Increase of quantity, as a general rule, and within certain limits, increases only the rapidity and severity of effect. But where the comparison is between doses, differing in an extreme degree, the character of the action is sometimes altogether changed. Thus oxalic acid is said by Dr. Christison to corrode the stomach, or to act on the heart, spine, or brain, according to its dose. It is probable, however, that dilution, as well as diminution of dose, plays a part in causing these different results.

Many poisons are used as medicines, which in small single doses produce little or no hurtful effect upon the animal economy; yet, after frequent repetition for a longer or shorter period, they give rise to sudden, and often alarming, derangements of health. Such substances are said to have a cumulative action; and the symptoms thus arising may either be the same in kind as those which follow a single larger dose, as is seen in the case of *nux vomica*, *colchicum*, and their congeners; or they may be altogether different.

Thus the gradual introduction of lead into the system may cause colic, paralysis, amaurosis, or epilepsy, which are rarely or never observed to follow the taking of a single dose of any of its salts. *Erethismus mercurialis*, and tremor *mercurialis*, are maladies never produced by mercury in a single dose, or in a few large doses.

Complete insolubility has, in general, the effect of rendering sub-

stances inert, as evinced in the cases of the sulphates of lead and baryta, and oxalate of lime. Apparent exceptions to this law exist in the alkaloids, as morphia, strychnia, and carbonate of baryta and lead, and some other bodies, the activity of which may be explained by their admitting of solution in the fluids of the stomach, though not in pure water. Cyanide of silver, though insoluble, is very poisonous, probably in consequence of undergoing decomposition in the stomach, during which, hydrocyanic acid is separated. As a general rule solubility favours, insolubility or sparing insolubility tends to counteract, the effects of poisons. Poisons, says Dr. Christison, act the more energetically the more minutely they are divided, and hence most energetically when in solution or in the form of vapour. Solution promotes their action, both by diffusing them quickly over a large surface, and by fitting them for absorption.

Admixture of innoxious insoluble matters with poisonous powders, acts, both by delaying or preventing the contact of much of the poison, with the coats of the stomach, and by diluting such portions of it as reach them. In this way, we may explain the fact of small but poisonous doses of arsenic having been taken in powdered charcoal or magnesia with impunity, although it was retained upon the stomach. Besides this, admixture facilitates a more complete expulsion of the poison, whenever vomiting either arises spontaneously, or has been artificially provoked. On all these accounts, poisons taken on a full stomach are, *cæteris paribus*, less apt to prove fatal.

Dilution of liquid poisons with water, or of such as are in solution, if it be carried to a sufficient extent, annihilates what we have called their acrid properties, or those by which they produce an injury of the parts to which they are directly applied. And since these acrid actions operate as hindrances to absorption, both by impairing the structures engaged in its performance, and by exciting the intestinal canal to expel the poison by purging or vomiting, dilution, which prevents the local injury and causes the material to be absorbed to rest longer in opposition with the absorbing surface, must on these accounts promote absorption, as also because it spreads the liquid over a large absorbing surface, and presents it in a form more suited for permeating the tissues by endosmosis, in consequence of the diminution of its density.

As the secretions of the stomach dissolve solid substances, so, we believe, do they dilute concentrated fluids prior to absorption, and it is partly in consequence of such dilutions being more readily and completely effected where the dose is small, that variations in the quantity of the poison taken produce, in many instances, a change in the character of the effects observed. Carbonic acid gas, and other gases having acrid properties, cause, when undiluted, a closure of the glottis, and may occasion death simply by suffocation; they must be diluted with atmospheric air in order to gain admission into the lungs and to display their specific effects.

Dr. Christison has gone so far as to lay it down as a general law, that poisons which only act locally, have their action much impaired or altogether neutralized in their chemical combinations. But without denying some efficacy to this cause in diminishing the acrid properties of poisons, we consider that the above law is far too strongly expressed. It seems to be overlooked, that a comparison is instituted between highly concentrated acid or alkaline liquids on the one hand, and more or less diluted solutions of neutral salts on the other. Now the truth is, that saturated solutions of most of the neutral salts when taken in large doses, produce formidable and even fatal disease of the alimentary canal. It is enough here to mention that nitrate of potash has, when taken in strong solution, caused speedy death in several instances. Other examples will be given under the head of Spurious Poisons, confirmatory of the fact that neutral salts are not so little acrid as the law just stated seems to imply. We doubt, indeed, if strong sulphuric, or nitric, or hydrochloric acid, in such quantities as are often taken for the purpose of suicide, had been previously neutralized by potash, or soda, or ammonia, and the resulting compound swallowed in as much water only as would dissolve it, whether the peril to life would be much, if at all diminished. It is probably true, however, that a less amount of dilution would render the neutral salt innocuous, than would suffice for the same effect either upon the acid or the alkali. Acrid actions, whether of spurious or of true poisons, are dependent upon the concentrated state of the noxious agent more than upon any other circumstance.

The second general law, announced by Dr. Christison, that the action of poisons which operate by entering the blood, although it may be somewhat lessened, cannot be destroyed altered in chemical combination (independently of the effect of altered solubility), seems to us open to no objection.

Secondly. Of changes in the effects of poisons, dependent on changes in the place of their application.

Acrid poisons, *cæteris paribus*, produce greater constitutional disturbance in proportion to the importance to the economy of the parts which they corrode or inflame. Hence their effects are most disastrous when they are taken by the mouth, and they may cause death by the mischief done to the stomach, or produce suffocation by their action at the entrance of the windpipe, or more tardily by the injury inflicted on the gullet, while some again, prove fatal by inflammation produced in the stomach and along the whole course of the intestines. The danger to life occasioned by any of these, is far less when they are thrown over the body, indeed, many of them cause little inconvenience when thus applied to the skin. Slow death, however, has followed the pouring strong acid into the ear, and life may be endangered, and sight destroyed, by a corrosive poison falling on the eyes. The strongest corrosives, nitric acid, and acid nitrate of mercury and of silver, have been frequently applied to ulcerated surfaces, and their actions have been limited to

the parts they touched. Some few instances are on record, of death produced by the injection of strong acids into the rectum, and such a result is in accordance with the principle here insisted on. The vapours of ammonia and other acrid gases, when sufficiently diluted to be inspired, may cause danger by exciting inflammation of the lungs. The admission of an acrid poison into the peritoneum, through an opening in the stomach, is invariably fatal.

When a poison acts in consequence of entering the blood, its injurious energy is proportioned to the absorbing power of the part to which it is applied. Hence such poisons take effect only in a few instances, and under peculiar circumstances when applied to the skin protected by its cuticle, while they act readily upon the nervous membrane of the alimentary canal, and yet more powerfully when received into the lungs. Hence arsenic in minute quantities is very destructive when inhaled in the form of arseniuretted hydrogen.

Some poisons, as carbonic acid and sulphuretted hydrogen, which are very deadly when respired, may be taken into the stomach without inconvenience, and occasionally even with advantage. The poison, too, of the viper, and, perhaps, of other venomous snakes, so dangerous when injected into a wound, may be swallowed with impunity, while the morbid secretions of glanders and farcy act readily through a wound or abraded surface, but may cause infection through mucous membranes also.

Thirdly. Of states of the recipient modifying the actions of poisons.

It is the general effect of idiosyncrasy or peculiarity of constitution, to cause substances to act as poisons, which are commonly innocuous, or to increase the virulence of such as are more active; thus, flat fish of every kind are poisonous to some individuals, as in two particular examples known to ourselves; shell-fish are injurious in a multitude of instances; and we once knew a gentleman who could take no fish whatever, without violent vomiting. We read in authors, of individuals so constituted, that chestnuts, oil almonds, eggs, sugar, &c. could not severally be swallowed with impunity; and Dr. Prout mentions a lady with whom mutton, in every form, disagreed. There are persons, also, in whom medicines produce distressing symptoms, in doses which are not usually followed by any inconvenience. Thus, with some, mercurial preparations in minute quantities give rise to salivation and other distressing consequences: by many opiates and other narcotics are extremely ill borne; and there are some in whom ipecacuanha produces a papular eruption, while its odour occasions severe dyspnoea in others. In a few rare instances idiosyncrasy has an opposite effect, and causes increased tolerance of medicinal agents; thus Dr. Colles speaks of several members of a family, who completely resisted the specific influence of mercury. Dr. Christison mentions a gentleman of his acquaintance, unaccustomed to the use of opium, who could nevertheless take an ounce of the tincture with-

out injury; and in the case of fermented liquors, there are some endowed with much greater power of resisting their effects than others. It is necessary for the medical man to be aware of the occasional occurrence of such peculiarities, yet, as the sources of them are entirely unknown, they throw no light either upon the actions of poisons, or upon human physiology. Neither do they exercise any important influence in the examples of poisoning which come under the notice of the toxicologist; for here the poisons themselves, arsenic, corrosive sublimate, oxalic acid, &c., are seldom or never affected by such peculiarities; and the quantities taken are, for the most part, so excessive, as to equalise all differences arising from this source, if they were.

The habitual use of certain drugs, does, in the case of a few of them, confer a power of resisting their ordinary effects; so that, without any present risk, they may be taken in such quantities as would otherwise prove dangerous or fatal. Opium, tobacco, and fermented liquors afford examples of bodies to which this rule applies, though by far most conspicuously to the first of these; some practised opium eaters having taken ten or even seventeen ounces of laudanum daily, of which two drachms swallowed at once would cause death in a majority of instances. We believe that there is scarcely any other poison with regard to which this influence of habit has been satisfactorily proved to obtain in any remarkable degree: corrosive sublimate and arsenic are certainly not of the number.

Many diseases have a very striking influence in diminishing the activity of medicines, and even rendering them inert in such doses as would commonly be poisonous. Thus, in epidemic cholera there is an extraordinary insusceptibility of the actions of all ingesta, be they what they may. Ether, brandy, opium, have been largely given without exciting the circulation, or causing any marked effect upon the brain. In insanity and delirium tremens narcotics, in such doses as would be otherwise poisonous, produce no hurtful result. In tetanus and hydrophobia there is a like resistance of their influence. In severe and extensive inflammation affecting any organ, mercurial preparations produce their specific effects with difficulty. We are not aware, however, that any kind or amount of disease can modify in a considerable degree the effects of acid or other poisons in the excessive quantities in which they are taken or given, when the purpose is to produce speedy death. Inorganic poisons, or those that belong to the mineral kingdom are, too, far less subject to the influences of disease than those of vegetable origin; and even in the case of such as are organic, whether vegetable or animal, the majority are little liable to have their actions limited by this cause. A like remark applies in the case of the modifications impressed by habit.

Spurious poisons are those which produce injury or death in consequence of the state of concentration in which they are taken or administered, and which are harmless when sufficiently diluted.

We have characterised them as acrid, considering that the action by which they cause structural mischief to the parts with which they come directly into contact is best described by that term. Many of the true poisons have this acrid action, which in them is also prevented by sufficient dilution; but these have an indirect action of an injurious tendency also; which indirect action is promoted by the circumstances which annihilate their acrid action.

Spurious poisons, whenever they cause suffering or death, give rise to a manifest local injury, and to remote disturbances due to sympathy; and these are the only modes that they have of causing disease and death. Though they are absorbed, it is probable that they can reach the blood only in such state or quantity as renders them harmless.

There are two kinds of acrid action, namely one which consists, in a chemical change effected in the tissues by the action of poisonous agents, and a second, which is seen in the production of inflammation.

The first kind of action may be designated as corrosive, and the poisons which possess it, corrosives. Such are the concentrated mineral acids and alkalies, nitrate of silver, acetic acid, and some others.

The second kind of action may be termed simply acrid, and the poisons which possess it, acrid poisons. A corrosive poison is in our view always acrid, but an acrid is not corrosive; and if, in speaking generally, we include corrosives under the head of acrids, nevertheless, when we come to details, we must distinguish, a corrosive action from one that is acrid only.

A peculiarity that distinguishes corrosive poisons is, that they act upon dead and upon living animal tissues; they decompose or disintegrate portions of the corpse no less than of the living animal body. Yet, generally, a certain intensity of action is necessary for this result; on which account it is, that, when moderately diluted, they, in many cases, lose their corrosive, and possess only an acrid action; and in practice this last is generally witnessed in conjunction with the former.

A simply acrid action, or such as produces inflammation of the parts to which the poison is directly applied, presupposes the life of those parts, no similar effect is visible where the simply acrid poison is brought into contact with tissues which have been for a few hours deprived of life. The number of purely acrid poisons is considerable.

Under the head of corrosives we shall describe briefly the mineral acids, viz., the sulphuric, nitric, and hydrochloric; the alkalies, potash, soda, and ammonia; and nitrate of silver, and acetic acid.

The *symptoms of poisoning by the strong mineral acids* are a strong acid taste, a burning pain in the mouth, along the course of the gullet, and in the region of the stomach, commencing immediately after swallowing the poison, and very soon followed by retching and vomiting of matters mixed with blackened blood, which

cause effervescence if they fall upon limestone pavement, and alter the texture and colour of any articles of dress or furniture on which they are thrown. The countenance, at first, pale and ghastly, the pulse feeble and rapid, the surface cold and clammy. When reaction has taken place the face is flushed, the skin warm, and the pulse more firm. There is, after a time, swelling of the tongue; and it and the surface of the mouth is seen to be coated with an opaque layer or membrane, which is white if sulphuric acid have been swallowed, lemon coloured if nitric acid; and this layer may separate in places and disclose a raw red surface beneath it. Deglutition is painful and difficult, and on this account there is often a dribbling of saliva. The intellectual faculties are at no time affected. Death may take place in a few hours; that is, within five or six, more commonly in from eighteen to twenty-four, and sometimes not for several days. In some few cases perforation of the stomach, causing effusion of its contents and general peritonitis, accelerates the fatal issue. In some, the chief mischief falls on parts about the fauces, and death results from inflammation of the larynx and air-passages, and is not long delayed. In not a few cases after recovery from the first effects of the poison, death follows months of suffering from stricture of the gullet, caused by cicatrization and thickening at the seat of the original mischief.

Treatment of poisoning by the mineral acids.—Magnesia, diffused in water or milk, is probably the best antidote, but weak solutions of carbonate of soda or potash may be given instead. It is a matter of primary importance that no time be lost, on which account it is better to give at once, milk, soap suds, or flour and water, or plain water, rather than wait for an antidote. It is easy to give water in such quantity, as to obviate the effect of heat arising from its admixture with oil of vitriol. No emetic is generally required for the expulsion of the poison, but ipecacuanha might be given in the dose of a scruple, if necessary: the use of the stomach pump is most objectionable. After the expulsion and neutralization of the poison, milk and mucilaginous drinks will be soothing to the injured mucous membrane, and afford the best nourishment to the patient; leeches, too, should be applied to the pit of the stomach, and along the throat at such parts as evince much tenderness on pressure; and small doses of laudanum are useful in allaying pain, in abating constitutional irritation, and procuring sleep. There is no need of haste in obtaining alvine evacuations, but when the bowels continue inactive, enemata should first be tried, and subsequently, if they fail, the mildest purgatives, in repeated doses, till the desired dose is gained. Castor oil, carbonate with sulphate of magnesia, in thin mucilage; or five grains of compound rhubarb pill, are among the best. But we protest against the use of croton oil, or any such drastic purgative, as likely to be most prejudicial.

When the windpipe and lungs suffer from inflammation, active antiphlogistic means, as leeching and even bleeding, may be

necessary, and ipecaeuania given to control the excitement. Tracheotomy has been proposed, and practised in a few such cases, but with no very encouraging success.

Examination after death from the mineral acids exhibits signs of their destructive energy in the mouth, gullet, and stomach; not unfrequently there are stains upon the external skin of the face or hands, which are brown if from sulphuric, lemon-coloured from nitric acid; the former produces a white layer made up of the lining membrane of the parts, more or less covered with tough mucus on the tongue, in the mouth, and interior of the œsophagus, while with the same state of things, a citrine hue is observed from nitric acid. Within the stomach it is common to find some portion of the coats, broken up as it were, and mixed with dark coagulated blood, constituting what has been termed black warty extravasation; and there may be perforation in the midst of such a mass, and escape of the contents of the stomach into the peritoneum, with consequent peritonitis; while beyond, the extent of the charring marks of inflammation will be found. Nitric acid, as well as sulphuric, blackens the blood with which it comes in contact, but leaves in the stomach, as in other parts, its yellow stain, where little blood is present; or it communicates a green tinge wherever it meets with bile. In a case of poisoning with nitric acid, treated at the London Hospital, in June 1849, death occurred, after four days, with perforation of the stomach. Few or no marks of injury are seen below the pylorus.

If the larynx and trachea become chiefly affected, which has happened more frequently from nitric than from the other acids, swelling of the epiglottis, œdema of the glottis, inflammatory redness, with some membranous exudation in the interior of larynx, along the trachea and larger bronchi, will be found. While the stain of the acid is seen on the parts that it has touched.

Tests of the mineral acids.—The materials to be tested are, any remains of matters proved to have been swallowed or to have been vomited, any matters found in the stomach, or intestines, or peritoneum, any portions of cloth, leather, or other articles, spotted by any part of the liquid swallowed or vomited, and spots on the skin. These matters or substances should be diluted with or macerated for several hours in cold distilled water, so as to obtain a liquid admitting of easy filtration. The acidity of the filtered liquor having been ascertained, we then apply tests, according to the particular acid of which we are in search.

The following is the best general method of testing for sulphuric acid:—A solution of nitrate of baryta is to be dropped into the filtered fluid supposed to contain it, as long as any precipitate is formed. If there be no precipitate, or if all the precipitate disappears on the addition of nitric acid, we are certain that no sulphuric acid is present. If there be a precipitate, some or all of which remains undissolved by the nitric acid, it is highly probable that it consists of sulphate of baryta, formed by the union of the

baryta of the test with sulphuric acid in the mixture. This conclusion is not certain, because the same test gives a like precipitate, having the same insolubility, with a few other rare acids. After, therefore, carefully washing, drying, and weighing the precipitate, about a grain, if there be so much, is to be thoroughly mixed by trituration with twice its weight of powdered charecoal, then carefully folded in a piece of platinum foil, and held for about a minute in the hottest part of the flame of a spirit-lamp; this process will reduce the sulphate, if it be such, to the state of sulphuret of barium, so that on throwing the powder into a little water, acidulated with hydrochloric acid, sulphuretted hydrogen will be evolved, and will be recognised both by its odour, and by the darkening of a paper, moistened with acetate of lead, held over the mixture. These results will show that the original acid was a sulphur acid, and could only have been sulphuric or sulphurous acid; the latter of which is comparatively rare. The imperfection of the above plan is, that the results are the same, whether sulphuric acid be free or in combination, so as to form a comparatively inert body, as it first existed, in the matter subjected to experiment. The acidity of these may be due, not to free sulphuric, but to some other acid, or to an acid sulphate, as alum. The best toxicologists have as yet devised no method of obviating this difficulty entitled to confidence, and the particular expedients which might be useful in particular cases are too long to detail. The symptoms, the post-mortem appearances, and many moral considerations, must often add their weight to the chemical evidences, and they are generally abundantly sufficient to establish or disprove the suspected cause of death.

If any portion of the concentrated acid remain in the vessel from which it has been taken, a drop put in a small test tube, in which a few pieces of copper wire are placed, will, on the application of the heat of a spirit lamp, evolve vapours of sulphurous acid, which may be known by their characteristic odour, and by their producing a violet colour when falling on starch, moistened with a solution of iodic acid. The property peculiar to strong sulphuric acid of developing heat, on the addition of an equal bulk of pure water, may be made distinctly manifest, with a very few drops placed in a small glass tube. These tests are subject to no fallacy.

Tests for nitric acid:—

Where from the citron colour of stains on the skin or mucous membranes, we have reason to suspect that nitric acid has been taken, the acid liquid should first be neutralized with carbonate of potash, in order to form nitrate of potash. The next step is to obtain this salt in a crystalline state, by the evaporation of the fluid in a vapour bath. If crystallization is prevented by the presence of animal matters, or cubical crystals of common salt are intermixed with those of nitre, Dr. Christison recommends to redissolve with distilled water, and to add to the liquid a warm solution of acetate of silver (made by agitating that salt in boiling water), as long as

any preeipitate is formed, to filtre again, and to evaporate the liquid portion as before. In this way ehlorine and much animal matter is removed, and the nitrate of potash obtained of sufficient purity for the application of tests.

We have been in the habit of using a small tube with a bulb at one extremity, and a narrowed neck intervening between this bulb and the rest of the tube, such in fact as is used for the reduction of arsenic, on the recommendation of Berzelius. Two or three drops of strong and pure sulphuric acid are first to be introduced into the bulb, and the interior of the tube carefully cleaned with a piece of fine rag, if it has been smeared over the sides. The nitre in powder should next be dropped in, and made to enter the bulb also, any remaining on the sides being carefully shaken or pushed downwards. After this the tube is to be held horizontally, or nearly so, care being taken that the acid in the bulb does not enter the neck. The interior of the tube, near its open end, is then just moistened with distilled water, so as to cause the morphia to adhere, which is dropped upon it. Heat is then carefully applied to the bulb, the tube being still horizontal, or with its open end slightly depressed; and the vapours of nitric acid in finding a vent redden the morphia, and dissolve it, so that a beautiful orange-coloured fluid, soon passing to straw colour, is formed. It is convenient, sometimes, partially to close the open extremity of the tube by a small cork, with a notch cut in it, so as to prevent the coloured fluid escaping, while the cork itself will give evidence of the action of the acid. We must be careful not to apply so much heat as to cause the sulphuric acid to evaporate, since in this case, the morphia is charred. A small fraction of a grain of nitre is sufficient for this experiment.

Another delicate test of nitric acid and nitre is the following:— If about a drachm of pure concentrated sulphuric acid be placed in a small glass, and a minute quantity of brucia, as half a grain, be added, no effect will be perceived; but if, then, a few drops of very diluted nitric acid be added, and the whole be stirred, a crimson colour is at once produced, which passes after a time to a yellow. The same result is observed, where a dilute solution of nitre instead of nitric acid is used, and is not in either case prevented by the presence of a little organic matter or common salt. Strong nitric acid is known at once by the red fumes given off when it is placed in a small tube with a few pieces of copper wire, while a blue soluble salt of copper is formed by the violent action that takes place. Other acids, as the sulphuric, act little or not at all, on clean copper, without the aid of heat.

Tests for hydrochloric acid:—

Nitrate of silver dropped into a solution containing hydrochloric acid or any ehloride, produces a curdy preeipitate, which blackens on exposure to light, is readily soluble in ammonia, from which solution it may be re-preeipitated by nitric acid, without being redissolved, when this last is added in great excess. If the ehloride

of silver be collected and washed, and fused on a piece of copper by means of the blow-pipe, we obtain a substance which, from its characteristic properties, is called horn-silver, admitting of being cut like that substance, and presenting a similar surface when so treated. The proto-nitrate of mercury is an equally delicate test, producing, under the circumstances just mentioned, a permanently white precipitate of calomel; which is decomposed by the strong alkalies or lime water in excess.

The analyst should remember, whenever spots on articles of dress or furniture supply the material for examination, that many of these articles have, in the course of manufacture, undergone chemical processes, which cause them to act upon the tests employed, even where none of the supposed poison has touched them. This is especially the case with articles that have been dyed, but may occur with others also; hence arises the necessity, when operating upon the spotted portion, to institute a comparative experiment upon an equal bulk of the same material which is free from any spot.

In this way we may establish the fact of sulphuric acid having fallen on the spotted part, by the far greater quantity of sulphate of baryta obtained even where the unspotted piece may yield traces.

All toxicologists are agreed as to the gross absurdity of expecting that, as a general rule, the quantity of poison discovered in the body after death should be such as is sufficient for the destruction of life; seeing that the greater part will in most instances have been either removed by vomiting, purging, and absorption, or have undergone decomposition in the tissues. Whenever the material to be examined is abundant, it is best to experiment upon small, but measured, portions of it, that an opportunity may remain of correcting any error, or removing any doubt. But the quantity of poison existing in the whole should be estimated from that discovered in a part, since the former may have an important bearing on the nature of the case. Although, as we have shown above, the quantity thus proved to be present after death has no necessary relation, and is no measure of the quantity administered or taken, the smallest quantities which have been known to be fatal in particular instances ought to be fixed in the memory of the medical witness.

About one drachm of sulphuric acid has produced death in an adult in seven days, and about half that quantity was fatal to an infant in twenty-four hours. About two drachms of nitric acid caused death in a boy thirteen years old in thirty-six hours. These are the smallest fatal doses actually recorded, and there are many instances of recovery from much larger. Hydrochloric acid is less powerful than either of the other two, and the cases of death produced by it are too few to enable us to determine the minimum fatal dose.

Concentrated Solutions of the Alkalies, Carbonates of Potash and

Soda.—The symptoms of poisoning by potash and soda, says Dr. Taylor, when taken in a strong dose, are so similar, that one description will serve for both. Cases of alkaline poisoning are very rare, and have been generally the result of accident. The most common form in which these poisons are met with is in the state of pearlash (carbonate of potass) and soap lees (carbonate of soda). The patient experiences during the act of swallowing an acrid caustic taste; there is a sensation of burning heat in the throat, extending down the œsophagus to the epigastrium. Vomiting is not always observed, but when it does occur, the vomited matters are sometimes mixed with blood of a dark-brown colour, and detached portions of mucous membrane—this effect depending on the degree of causticity of the liquid swallowed. The surface is cold and clammy; there is severe bloody diarrhœa, with pain in the abdomen. The pulse is quick and feeble. In the course of a short time the lips, tongue, and fauces become swollen, soft, and red.

After death the mucous membrane of the month, fauces, and œsophagus has been found softened and detached in places, and inflamed. The same appearance has been met with in that of the larynx and trachea: the stomach has had its mucous membrane dissolved in patches, and there has been partial inflammation. Orfila thinks potash one of the poisons most likely to cause perforation of the stomach.

Death happened in three hours to a boy who had taken three ounces of a strong solution of pearlash: in twenty-four hours to a child of three years that took a small quantity that had deliquesced. In other instances persons have recovered from the first symptoms, and have then gradually wasted and sunk in the course of a few weeks.

Treatment.—Water slightly acidulated with any of the mineral acids, vinegar, citric, tartaric acids, or made demulcent by the presence of such matters as gum, gelatine, starch, flour, or the like, or milk, or oil, the last-named article being probably one of the best antidotes. Here, as in poisoning with the strong acids, promptitude is every thing; and it is better to drench the sufferer with water alone than to go further for an antidote: the acid drinks may be substituted as soon as they are procured. Mild diet, soothing medicines with opiates, must follow the dilution and expulsion of the poison.

Tests for Carbonate of Potash and Soda.—If the fluid obtained by soaking the contents or tissues of the dead body or vomited matters in distilled water, after filtration and concentration to a convenient extent, be found to restore the blue colour to reddened litmus, and to change the yellow of turmeric paper to a permanent brown, and if it effervesce on the addition of an acid, — as the acetic, — we may be nearly certain that it contains either potash or soda in the state of carbonate.

If a piece of unglazed paper moistened with this solution be

smeared with a little pure unsalted tallow or lard, and then be held with its head in the scarcely visible outer layer of the flame of a candle, it will be found to produce a streak of purple flame if potash, of yellow if soda, be the salt in solution.

Again, if a little of the alkaline fluid be added to a saturated solution of tartaric acid, we shall have first an escape of carbonic acid gas, if either of the carbonates be present, and then the formation of a crystalline precipitate of bitartrate of potash, if potash have been the alkaline salt. This result is much assisted by shaking the mixture in a tube.

Water of Ammonia and Sesquicarbonate of Ammonia are possessed of acrid solvent properties no less energetic than those of the fixed alkalies. There are very few well reported cases of poisoning with either of these bodies. Inflammation of the lungs has on several occasions been produced, and in a few instances to a fatal extent, by the inhalation of the vapour when they have been kept too assiduously under the nose of epileptics or others by friends with more zeal than discretion. In a young man—a chemist's assistant—exposed to the vapour of strong liquor ammoniæ, from the contents of a large carboy which burst in a room adjoining the closet where he slept, we read that the mucous membrane of the mouth and nostrils appeared to be destroyed, as was the cuticle of the tongue, and cavity of the mouth. Respiration was extremely difficult, and deglutition almost impossible. Notwithstanding the depressed state of his pulse, he recovered under the free use of blood-letting. In a case referred to by Dr. Taylor, where between one and two drachms of ammonia unknowingly administered caused death, there was violent vomiting with bloody stools, and on inspection blood was found effused in the intestines.

Ammonia may be known by its odour, by the white fumes produced when its vapours meet those of hydrochloric acid proceeding from a rod dipped in the latter, and held near the surface of the fluid containing it, and by the production of a brown colour on turmeric paper, which gives place to the original yellow on drying with a gentle heat.

Nitrate of Silver in a concentrated solution acts as a powerful corrosive, destroying all the organic tissues with which it comes in contact. There are, according to Dr. Taylor, at least two cases on record in which it has proved fatal in the human subject, but the particulars are unknown. The symptoms come on immediately, and the whitish matter vomited is rendered dark on exposure to light.

Common salt is the proper antidote, given copiously in a dilute solution. Vomiting should be produced, if it do not supervene spontaneously, by tickling the fauces with a feather or by emetics. The subsequent treatment is the same as that of poisoning by other corrosives.

The most convenient test is hydrochloric acid, or any soluble chloride, as common salt, either of which gives with an acid solution

of the nitrate a curdy precipitate of chloride of silver, insoluble in nitric acid, but readily soluble in ammonia. Chloride of silver, when collected, washed, dried, and fused on platinum foil, gives the characteristic appearance of horn silver, spoken of above under the head of hydrochloric acid.

Strong Acetic Acid, possessing as it does the power of dissolving albumen and many of the soft animal solids, seems entitled to a place among the corrosives. Some narcotic effects were perceptible in one case, where an enormous quantity of vinegar was swallowed; but in general the action of the dilute acid has not been such as to entitle it to rank with the true poisons. Eight ounces of common vinegar, swallowed by mistake, are said by Dr. Christison to have produced no inconvenience; a result which seems to bring acetic acid under our definition of a spurious poison.

Strong acetic acid in all its forms is injurious, and even fatal, to dogs if given in sufficient quantity, provided vomiting is prevented by a ligature on the œsophagus.

One case only of fatal poisoning with it in the human subject is on record.

A girl, when first seen in a village near Paris, appeared to be intoxicated, and five hours afterwards was found lying on the ground in great agony, and, after complaining of pain in the stomach, and suffering several attacks of convulsions, she expired.

The stomach presented internally several large black firm elevations, owing to the injection of coagulated blood into the sub-mucous cellular tissue; and elsewhere it had a greyish white tint, with here and there a reddish colour; but the mucous membrane was entire. A large quantity of acetic acid was separated from the contents of the stomach and intestines.

A patient of Dr. Melion (*Journal de Chimie Médicale*, 1845, p. 654.) took a spoonful of strong acetic acid, and felt immediately violent pain and burning in the chest and stomach, but recovered under the use of carbonate of magnesia, after having had much purging and vomiting. The mucous membrane of the mouth was whitened as by sulphuric acid.

Dr. Taylor quotes from Dr. David of Montreal an instance where a woman, after taking a quart of vinegar, was covered with cold perspiration, and trembled from hand to foot. The countenance was wild, pupils dilated, breathing hurried, abdomen much distended, with great pain at the pit of the stomach, and she was unconscious. An emetic, followed by carbonate of magnesia, brought away matters smelling strongly of vinegar. In six hours the symptoms abated, and she ultimately recovered.

The treatment is the same as that of poisoning with the mineral acids.

Acetic acid is known by its reddening litmus paper, and by its peculiar odour. It may be separated from organic mixtures by distillation; and if received in a vessel containing litharge, combines with it to form acetate of lead, which may be dissolved and

crystallised; and the acid obtained in a more concentrated state on the addition of slightly diluted nitric acid, and a gentle heat.

The non-corrosive spurious poisons differ from those described above, inasmuch as their action is limited to the production of inflammation. Substances of this kind effect no change in the chemical composition of dead animal tissues.

Tartaric Acid must now rank among the spurious poisons, since, in one instance, an ounce dissolved in half a pint of warm water, and taken by mistake for Epsom salts, produced immediately a burning sensation in the throat and stomach, and afterwards vomiting, which continued till death, nine days after. Here soda and magnesia were early administered without avail. Nearly the whole of the intestinal canal was found highly inflamed. The treatment is the same as for mineral acids.

Tartaric acid in solution gives no precipitate with chloride of calcium, nitrate of silver, or sulphate of copper. If to a little strong sulphuric acid a few drops of a solution of bichromate of potash be added, and then a drop or two of a strong solution of tartaric acid, the mixture, on being shaken together, is seen to be of a beautiful green, which colour it retains for many days. In all these respects this acid resembles the citric, but differs from the oxalic.

If a solution of tartaric acid be neutralized, or nearly so, by carbonate of potash, nitrate of silver produces in it a precipitate of tartrate of silver, which, on being collected, washed, dried, and then heated in the flame of a spirit lamp, swells up, and leaves an abundant residue of metallic silver. Oxalate and citrate of silver, under similar treatment, are dissipated, so as to leave little residue, and that presents a grey pulverulent appearance.

Dr. Taylor directs maceration in spirit in order to extract tartaric acid from organic mixtures, these having been (as we suppose) previously dried over a water-bath.

Citric Acid.—It is probable that this acid, like the preceding, is capable of producing danger, and even death, if taken in strong solution, and in a large dose. But no example of poisoning with it is at present known. It may be distinguished from oxalic acid in the manner stated under the last head. Potash, or its carbonate, when dropped into a strong solution of citric acid, so as to leave the acid in great excess, gives no crystalline precipitate, as in the case of tartaric acid.

Many saline bodies in common use have been known to produce death when swallowed in excessive doses, either in a solid state or in strong solution. The general symptoms are pain in the stomach, with vomiting and purging, and prostration of strength, rapidly terminating in death by syncope, or producing the same result after several hours or days by gradual exhaustion. Examination after death, for the most part, reveals more or less intense inflammation of various parts of the alimentary canal. For few or none of these poisons is there any antidote; and the treatment is confined to

diluting the poison with water, or any demulcent fluid, to obtaining its expulsion by emetics, and subsequently to repressing the local inflammation, by the appropriate remedies, and soothing constitutional irritation by opiates.

Sulphate of Potash.—Ten drachms of this salt taken in divided doses produced death in two hours after the last dose, in a lady who had been confined a week before. Two doses of two ounces in each, taken at an interval of a day by another woman, caused violent vomiting and death five hours after the last.

Nitrate of Potash.—In a case recorded by Orfila, an ounce of nitre was taken by a lady in mistake for salts, and she died in three hours. Dr. Geoghegan has related a similar accident, which proved fatal to a man in two hours, the dose being somewhat more than an ounce. That these unfortunate accidents are due, not to the quantity of the salt, but to its state of concentration, appears from the fact, that from half an ounce to an ounce dissolved in two or three pints of water has been given daily in cases of rheumatism at Paris without any injurious result.

Common Salt, or Chloride of Sodium, has on several occasions caused death. Thus, Dr. Dixon mentions that a man who performed the feat of supping a pound of salt in a pint of ale, died within twenty-four hours; and a girl in the north of England died in consequence of taking half a pound as a vermifuge.

Cream of Tartar. Bitartrate of Potash.—Mr. Tyson, of Somers Town, has published, in the thirty-first volume of the Medical Gazette, an account of a man who died on the Thursday, after having swallowed throughout the previous Tuesday cream of tartar in substance to the extent of four or five tablespoonfuls; which he had done for the purpose of cooling his stomach, while suffering under the effects of Monday's drunkenness.

Epsom Salts. Sulphate of Magnesia.—Two ounces of this substance, partly dissolved and partly mixed in a cup of water, were swallowed by a boy ten years of age, having been given to him by his father for the cure of worms. He immediately staggered, and seemed unwell. In half an hour his pulse was imperceptible, and he died in ten minutes more without any vomiting. Death seems to have arisen here from the powerful shock of an acrid substance on the stomach, depressing the circulation, so as to admit neither of constitutional reaction nor of local inflammation. No morbid appearance was found in the body after death.

Some metallic salts fall, according to our view, in the class of Spurious Poisons.

Green Vitriol. Sulphate of Iron appears to have caused death at least in two instances. A little girl four years of age was seized with vomiting and purging immediately after breakfasting on some porridge, which had a bad taste, and died in the course of the afternoon. It was four months before any examination was made, and the most remarkable appearance was a thick layer of black jet mucus, which lined the alimentary canal from the pharynx

down to the anus; in which a large quantity of iron was detected. In a second case, in which a woman was suddenly seized with vomiting and purging, and died in fourteen hours, there was some redness in the mucous membrane of the stomach and intestines, and iron detected in large quantities was the only agent to which the death could be referred.

Tincture of Sesquichloride of Iron taken by mistake to the extent of an ounce and a half, produced in one case first depression, and then vomiting and purging of mucous blood; after which there was apparent convalescence; but, after a time emaciation, and death in about six weeks, from the accident.

Trisnitrate of Bismuth. Magistery of Bismuth.—Two drachms of this substance taken with a little cream of tartar, by mistake for chalk and magnesia, caused immediately burning in the throat, vomiting and purging, with suppression of urine, and death in nine days. On inspection after death, there were but few points of the alimentary canal, from the back of the mouth to the rectum, that were free from disease.

We shall not prolong our list of Spurious Poisons, although probably other bodies, both mineral and organic, might be included in it with propriety.

~~The True Poisons~~, of which we are now about to speak, may have corrosive or other acrid actions; but, if so, they have others, also, of a specific irritant or narcotic kind, which cause them to be hurtful or deadly when their acrid actions are destroyed by dilution; or, without possessing acrid properties, they may have specific irritant, or merely narcotic, actions; or, like arsenic, they may combine all the three modes of action.

Oxalic Acid.—Cases of poisoning with this acid have arisen only when it has been voluntarily taken for the purpose of suicide, or has been swallowed by accident; the acid having in the majority of the latter instances been supplied by mistake for Epsom salts.

This acid is said to possess some corrosive power dependent upon its chemical action on gelatinous tissues, but this appears not to be considerable. In strong solution, however, it is exceedingly acrid, causing severe injury to the parts over which it passes. It is chiefly from experiments performed with it in a more diluted state upon animals that we learn that it acts indirectly on the brain, spine, and heart. When the quantity is large the most prominent symptoms are those of palsy of the heart; from a smaller dose the animal perishes after several fits of violent tetanus, which terminate in suffocation. When the dose is still less, the animal dies in a state of stupor.

In man the most prominent symptoms have been those of excessive irritation, because it has been almost always swallowed in a large dose and much concentrated. These are an acid taste, a burning pain in the stomach, for the most part immediate, and generally also in the throat, with vomiting within a few minutes, often continuing till death. The matters vomited are sometimes

bloody; and if the patient survive for twelve hours or more there may be looseness of the bowels or tenesmus in addition, and blood may be found in the dejections. In some cases vomiting has been delayed, in others altogether wanting; and the same may be the case with the pain also. The pulse is feeble, or wanting, and the surface cold and clammy, the strength prostrated, the perceptions dull. There is numbness or tingling in the extremities, especially when the sufferer survives the first symptoms; in which case soreness of the mouth, with difficult deglutition, swelling of the tongue, thirst, tenderness of the abdomen, and diarrhœa are apt to supervene.

Death from this poison has occurred within ten minutes. Dr. Taylor thinks it probable that in one example it happened in three; and in the majority of fatal cases it is not delayed beyond an hour. One or two cases have lasted for thirteen hours; and one patient was carried off at the end of twenty-three days. More or less of palsy is observed in cases of recovery to continue after the cessation of the other symptoms.

Treatment.—Chalk is the appropriate antidote for oxalic acid, and should be given diffused in water. It is matter of astonishment to find authors like Dr. Christison and Dr. Taylor objecting to the employment of the alkalies, potash and soda, on account of the solubility of the oxalates which they form, and yet recommending magnesia or its carbonate, which has, as compared with lime, very feeble affinity for oxalic acid, and forms a very soluble compound with it. Dr. Taylor says, that lime-water and oil might be given advantageously; and probably lime-water and milk would be equally serviceable; either would be preferable to water alone, yet must be given very copiously where any large quantity of the acid remains in the stomach. In some instances, according to the last named author, water alone has been found to be productive of great benefit. Emetics of sulphate of zinc, or of ipecacuanha, should be given where spontaneous vomiting is absent, or tickling the fauces with a feather may be tried; but we protest against the use of the stomach-pump in all cases of poisoning with acrid substances. The after-treatment consists in abating inflammation by local leeching and fomentations, and administering ammonia to rally the pulse if there be great and persistent depression.

Post Mortem Appearances.—Dr. Taylor gives as the ordinary appearances of the stomachs of those who have died after taking this acid:—First, contents, of the colour of coffee grounds, consisting of altered hæmatosine and mucus, and separating into a supernatant fluid and insoluble deposit; secondly, softening of the mucous membrane with various shades of brown colouration, erosion, or gelatinization; thirdly, brownish black vermiform vascularity of the submucous tissue, owing to the imbibition of the acid contents. In protracted cases, he adds, the œsophagus, stomach, and intestines have been found more or less inflamed. In some instances there have been scarcely any perceptible morbid appearances pro-

duced. The outer coat of the stomach and intestines has sometimes been found inflamed, in conjunction with the marked affection of the interior described above.

Tests of Oxalic Acid.—Solutions of sulphate of lime, sulphate of copper, and nitrate of silver give precipitates with pure solutions of oxalic acid, even when much diluted, which are white in the first and last cases, and greenish white in the second. The oxalate of lime may be known by its ready solubility in nitric acid, its difficult solubility in hydrochloric. The oxalate of silver, when collected, washed, and dried, and heated in platinum foil held in the flame of a spirit lamp, becomes brown on the edge, then fulminates faintly, and is dispersed. The only precipitates produced from sulphate of copper at all resembling the oxalate are the carbonate and the hydrated peroxide, and either of these is readily dissolved in acetic acid and in the mineral acids, even when much diluted; whereas the oxalate is quite unaffected by these agents. Taken alone, sulphate of copper is the most characteristic test; the three taken together, if they agree in their indications, may be regarded as affording conclusive evidence of the presence of oxalic acid, or of a soluble oxalate.

Where organic mixtures are to be examined, it is recommended to drop a solution of acetate of lead into the suspected liquid after filtration, as long as any precipitate is found to collect, and wash this precipitate, then to diffuse it in a little distilled water, and to transmit sulphuretted hydrogen for an hour, or till all the lead is completely blackened. The precipitate is then to be removed by filtration, and we may test the filtered liquid (after boiling) for oxalic acid separated from the lead.

Half an ounce is the smallest dose in which oxalic acid is at present known to have been fatal; but much smaller doses, as two drachms, and even two scruples, have produced symptoms of much gastric irritation. A few instances of recovery have occurred where the dose was an ounce; but such a result is the exception. The soluble oxalates of ammonia and potash are, according to Dr. Christison, scarcely less poisonous than the acid itself. But of these he says that they do not corrode, they scarcely even irritate, but produce tetanus and coma like the diluted acid. In Mr. Jackson's case, however, where an ounce of the binoxalate of potash was taken, the symptoms were those of alternating irritation and depression.

The treatment and tests are the same as for the acid itself.

Arsenic is of all poisons that with which it is of by far the greatest importance for the medical man to be well acquainted, since it is with this more frequently than with any other—indeed more frequently than with all the others put together—that the crime of poisoning has been perpetrated.

Metallie arsenic, according to Dr. Christison, has an iron grey colour, a specific gravity of 8.308, and a crystalline fracture. It is very brittle. In air, particularly when moist, it becomes rapidly

tarnished, a black power being formed, which some have regarded as a regular protoxide. Other oxides are considered as a sesquioxide; that is, a combination of three atoms of oxygen with two of metallic arsenic, which is known as arsenious acid (or white oxide of arsenic, or simply as arsenic, and which is the most common, and by far the most important, of all the combinations of the metal), and arsenic acid, containing five atoms of oxygen, and two of the metal.

There are also two sulphurets, viz. one — Realgar — of a fine orange colour, composed of one atom of sulphur and one of metallic arsenic, and a second containing three atoms of sulphur to two of the metal, which is known as orpiment, and is of a rich yellow colour. The orpiment of the shops is not a pure sulphuret, but a mixture of orpiment with arsenious acid. Orpiment also forms a large proportion of the pigment known as king's yellow. It is this sulphuret (orpiment) which is formed when sulphuretted hydrogen is transmitted through a solution of arsenious acid.

Besides these compounds, there is a pigment known as Scheele's green, which consists chiefly of arsenious acid and deutoxide of copper; and has in several instances given rise to symptoms of poisoning. Arsenite of potash is the active ingredient of the medicine known as Fowler's Solution, the Tasteless Ague Drop, or Liquor Potassæ Arsenitis of the London Pharmacopæia. Arseniuretted hydrogen, a highly deleterious compound, is evolved in admixture with various proportions of hydrogen, whenever that gas is generated in a mixture, containing arsenic either in the metal or acid employed, or in the fluid to which they may have been added. Metallic arsenic and its oxides are readily sublimed by heat; as are also the sulphurets. Arsenious acid may be separated by heat from the arsenites of copper and silver. Metallic arsenic, when quite free from any oxide, is said to be harmless. Its alloys are also inert, as is mispickel, or arsenical pyrites. The sulphurets of the shops are active poisons, on account of the arsenious acid which exists in them. It is probable that the sulphurets when pure are not quite harmless, but they are certainly far less active than other more soluble combinations of the metal.

Arsenious acid is the substance which, in what follows, will engage our principal and almost exclusive attention.

This body is met with in two states, — more commonly as a white powder, occasionally not so fine as to be devoid of all grittiness, but often, we believe, quite smooth and soft; or it may be obtained in solid masses, having a vitreous fracture, the external portion being opaque, while the interior is transparent like glass. By breaking off the outer crust, we may sometimes procure entire lumps having this transparency; but they are prone to become again opaque, on the surface, to a greater or less depth, unless kept in vessels hermetically sealed, in consequence, as was shown by Dr. Pereira, of slowly absorbing moisture. Arsenic, in this crystalline state, whether transparent or opaque, is supposed to be somewhat

less soluble than the powder. Our chief concern, however, is with this last.

Arsenious acid has no smell, although the vapours of metallic arsenic have a powerful garlicky odour, which belongs also to arseniuretted hydrogen. Much discussion has arisen, and different opinions have been expressed, as to whether it had any taste or not : it is now generally believed to have little or none. It is said sometimes to have occasioned a sensation of grittiness when swallowed ; but this is rare. There is no doubt, says Dr. Christison, that in the way in which arsenic is usually given, with a criminal intent,—namely, mixed with articles of food,—it seldom makes any impression at all upon the senses during the act of swallowing.

The symptoms of poisoning with arsenic, when taken by the mouth, commence generally in from half an hour to an hour, with sickness, faintness, vomiting, and pain at the stomach, increased by pressure. The vomited matters often contain mucus, and are sometimes streaked with blood. The vomiting is followed by diarrhœa more or less violent, and this is accompanied by more or less cramp in the legs. The vomiting is sometimes violent, and incessant, excited by any thing taken into the stomach. The pulse commonly becomes small, feeble, and rapid soon after the vomiting sets in ; the countenance is almost always expressive of great torture, the eyes red and sparkling, the conjunctivæ often injected, the mouth parched, and the palate sometimes covered with little white ulcers. Delirium, or coma, sometimes precedes death, or there may be convulsions, or the sufferer may sink from mere exhaustion. In the more protracted cases, various eruptions, described as resembling petechiæ, or measles, or miliaria, or small-pox, have occasionally been observed. In some cases a short remission or intermission of the symptoms has been observed ; but this occurs only in those of somewhat lengthened duration.

It is important to remark, that the commencement of the symptoms varies very considerably : thus, there are a few instances in which they have come on while the patient was in the act of eating the poisoned cake, or soup ; in several recorded cases they have supervened in eight, ten, or fifteen minutes ; and while the time stated above, of from half an hour to an hour, is considered the ordinary interval, they have occasionally been delayed so as not to appear for five, seven, or even ten hours, this last, according to Dr. Taylor, being the longest interval known.

The duration of the fatal cases also admits of very great variety, extending, as it does, from two hours to several days, from eighteen hours to three days constituting its more usual length. There are cases of occasional, but not frequent, occurrence which by Dr. Christison have been classed by themselves, in which the ordinary symptoms of vomiting, purging, and pain are slight or altogether wanting, while, nevertheless, death comes on with great rapidity, in consequence, as it would seem, of a depressing action on the heart. Such cases, moreover, are peculiar, inasmuch as slight or

no signs of inflammation are discovered in the body after death. Dr. Taylor dissents from the high authority just referred to, in considering that these remarkable instances can be connected with no peculiar circumstances of magnitude, or of close state of aggregation in the poison. Whether the effect in these cases be due to such an action on the stomach as causes general depression of the circulation incompatible with local inflammation, thus affording an example of death from violence without reaction, or whether it is to be referred to the absorbed poison acting specifically on the heart, it is not easy to determine.

In cases which terminate in recovery or in tardy death, various nervous affections are more distinctly observed than in those of a severer character. Here, after the occurrence of vomiting and purging at the outset, convalescence may be delayed by paralysis of greater or less extent, and completeness or paroxysms of epilepsy may come on, or stupor and coma, terminating in death. Local palsy, according to Dr. Christison, is the most frequent of the secondary effects of arsenic, and it is sometimes very obstinate. Falling off of the hair and nails and desquamation of the cuticle are occasional consequences of arsenical poisoning. The secretion of urine has been in a few instances suppressed, and at times there is much excitement of the urinary organs; but such symptoms seem dependent upon the irritation of the lower bowels and anus. Urinary symptoms, according to Dr. Christison, are seldom present unless the lower bowels are strongly irritated, but are then seldom altogether wanting.

Arsenic, applied to blistered surfaces, eruptions, ulcers, or wounds, has produced dangerous, and even fatal, consequences.

When thus applied, it induces both local inflammation and constitutional symptoms, the latter much resembling those which occur when it has been taken by the mouth. It seems in these cases to act more readily when in contact with a bleeding spot or surface: otherwise a strong ointment or mixture, which produces an eschar, is esteemed less dangerous than a weaker one. Administered by the rectum, and introduced into the vagina, it has also caused death in a similar manner.

In the few unfortunate cases in which arseniuretted hydrogen has been incautiously inhaled, in addition to the symptoms of gastric irritation and general prostration, the kidneys have been generally much affected, as indicated sometimes by total suppression of urine, sometimes by frequent and painful micturition of bloody water; and jaundice, too, has been a prominent symptom in some cases. Yet life has been protracted for several days.

Treatment of Poisoning with Arsenic.—When spontaneous vomiting does not take place speedily and freely it should be accelerated or promoted by an emetic of half a drachm of sulphate of zinc, or by a teaspoonful of powdered mustard, diffused in a tumbler of water, if the latter form of emetic be more readily accessible; and milk, flour and water, magnesia or chalk and water,

or lime water and oil should be given from time to time, with the view of rendering the expulsive efforts of the stomach less distressing, and of enveloping any particles of the poison that may remain, so as to facilitate their discharge. Inert powders, as chareoal and magnesia, in considerable quantity, with which small, but poisonous, quantities of arsenic had been mixed, have been found to abate or prevent its injurious effects when the two substances have been thus taken together. The case is very different when the poison is first taken, and has in part become agglutinated, as it is wont to do, by viscid mucus to the inner coat of the stomach. Such adherent portions are not easily detached, and the expedients mentioned above as aids in the attainment of this object are recommended rather in default of better than from confidence in their own efficacy. The employment of the stomach pump offers no greater promise, and we agree with Dr. Christison that its use is to be avoided.

The only substance which in the present day enjoys any reputation as an antidote for arsenic is the hydrated sesquioxide of iron. This is prepared by dissolving the rubigo ferri, or ordinary sesquioxide, in dilute sulphuric acid with a gentle heat, then decomposing with liquor ammoniæ, and afterwards washing, draining, and slightly squeezing the precipitate obtained upon a cloth filter, and then preserving it wet in stopped bottles for use.

This antidote was first introduced to public notice in the year 1834 by Drs. Bunsen and Berthold, and, although its efficacy be doubtful, will deserve a trial, while, as yet, there is none to be preferred to it. To be effectual it must be given in large quantities, so that there may be at least twelve times as much of the antidote as of the arsenic in the stomach. Dr. Christison evinces considerable confidence in its virtues; while Dr. Taylor's researches show that it does not completely displace arsenic from any solution in which it may exist, and that it has little or no action on the poison when in powder or substance.

When the poison has been, as far as practicable, either expelled or neutralized, we have to combat the inflammation which it has excited in the alimentary canal, and the disturbances which its absorption may have caused in other organs. In some instances venæsection has been resorted to, and apparently with benefit, more especially where cerebral excitement—as epilepsy—has occurred. Should the condition of the patient induce us to venture upon a first bleeding, its effects after a few hours will encourage us in, or deter us from, a repetition of the same measure. If it be our purpose, according to the suggestion of Orfila, thus to diminish the quantity of poison circulating in the system, the detraction of blood must be considerable. But another expedient suggested by the same author is open to us,—namely, to effect its elimination with the urine, and with this intent the best diuretic will be found in copious draughts of diluents—as water, or thin mucilage—as the decoction of marsh mallow, to which a few grains of nitre—as five

grains to the ounce — may be added. More powerful diuretics should be avoided, since it is from excess, rather than defect, of stimulus that the kidneys are wont to suffer in these cases; so that cupping or leeches on the loins might be useful where bloodletting is contra-indicated. Dr. Christison suggests the combined employment of venæsection and opiates as appropriate in some cases. In many the latter will be serviceable in moderate doses to allay irritation. Small opiate enemata, or a little lard mixed with a grain or two of opium and smeared with the finger just within the anus, will be useful in relieving tenesmus. The diet should consist of milk or farinaceous articles, and only the mildest aperients should be resorted to, if it be found necessary to act on the bowels. The warm bath will often relieve the symptoms of slight paralysis which attend convalescence.

Post Mortem Appearances in cases of Poisoning by Arsenic. — There are some examples, where death has come on rapidly, preceded by slight or no symptoms of gastric irritation, in which few or no morbid changes are discovered within the corpse. It should be remembered that lividity of the surface is not characteristic of this or of any other form of poisoning.

Redness of the throat and gullet is not commonly mentioned in descriptions; but it is probable would be more frequently found if more carefully looked for. Redness of the inner coat of the stomach is very common; but inflammatory redness of the peritoneal coat is rare. There are, not uncommonly, dark spots on the villous coat from extravasation of altered blood, at times amounting to black warty extravasation. Small collections of white or yellow particles are at times seen glued by a viscid mucus to the villous membrane in places having an areola more deeply and uniformly reddened than the rest. Some degree of softening of the inner coat is not uncommon, and may cause loss of substance in patches. Ulceration is rare, except in cases of somewhat lengthened duration, and perforation of the stomach is very rare indeed. The occurrence of gangrene is problematical. Arsenic is not a corrosive. The mucous secretion of the lining membrane is generally increased in quantity; often it is thin, but viscid, but sometimes abundant, and solid, as if coagulated. Blood or sanies is also met with. Sometimes, though rarely, the morbid appearances are limited to the stomach, but redness of the mucous membrane of the intestines is often present when the stomach is much inflamed. Signs of inflammation, however, are seldom distinct in the small intestines much below the duodenum, and they do not often affect the colon; but the rectum is sometimes much inflamed, though the colon and small intestines are not, and excoriation of the anus is observed in protracted cases. The external organs of generation are sometimes inflamed, or even gangrenous.

In some rare examples signs of inflammation have been found in the substance of the lungs, or in portions of the pleuræ. Dr. Christison, from whom we have derived the foregoing description,

makes no mention of the condition of the brain; but in a case published by Dr. Letheby, in which two grains and a half of arsenic dissolved in two ounces of water were fatal in thirty seven hours, with coma at the close, coagulated blood was found in the lateral ventricles, and the brain was very much congested. (Med. Gaz. IV. 1847, p. 116.)

Arsenic has been supposed in some cases to hasten the process of putrefaction; but the examination of many bodies exhumed after long burial shows that in the majority of instances it has a preservative influence upon those parts with which it has been in direct contact, and sometimes even their colour is retained. Thus Dr. Taylor states that a deep red inflammatory appearance of the mucous membrane below a layer of sulphate of arsenic was well marked in two instances where the bodies had been buried nineteen months.

Chemical Properties and Tests of White Arsenic. Solubility.—Hot water poured on powdered arsenic and allowed to cool dissolves, according to Dr. Taylor (Toxicology, p. 312.), about the 400th part of its weight, or nearly one grain and a quarter per fluid ounce. Water boiled for an hour on the poison and allowed to cool holds in solution the 40th of its weight, or twelve grains per fluid ounce: while cold water, after standing for many hours, dissolves only from the 1000th to the 500th of its weight, or half a grain per ounce. The presence of organic matter renders the poison much less soluble; yet viscid fluids favour its suspension. Any alkali or alkaline carbonate dissolved in a liquid greatly increases its solvent power. Strong hydrochloric acid dissolves it readily. Digestion with nitric or with nitro-hydrochloric acid converts it into arsenic acid. Arsenic is liable to be converted into orpiment by sulphurets evolved after death in the body as well as by the transfusion of sulphuretted hydrogen through mixtures in which it is dissolved. When arsenious acid in powder is placed on a piece of platinum foil and held over the flame of a spirit lamp, it sublimes and is dissipated. If it be placed in a thin glass tube of small calibre and heated in the same way it sublimes, and is deposited again at a short distance from the place of application of the flame; or if, in the last case, the arsenious acid have been first carefully mixed with twice its weight of finely powdered and perfectly dry charcoal, instead of crystals of arsenious acid, a ring of metallic arsenic, having the appearance of steel, will be formed on the interior of the tube; and a garlicky odour will be perceived on smelling at its open extremity. A similar odour of garlic is produced by a small fraction of a grain of arsenious acid placed on a cinder at a dull red heat.

If a drachm of fused nitrate of silver and an equal quantity of sulphate of copper be each dissolved in about twelve drachms of distilled water, and water of ammonia be gradually added to each solution, we shall at first precipitate an oxide of the metal in each case, and if we continue to drop in the ammonia, stirring as we

proceed till the oxides are nearly, but not quite, redissolved, we shall obtain, too, solutions of the ammonia-nitrate of silver, and of the ammonia-sulphate of copper, which are delicate tests of the presence of arsenious acid in pure water. The former, known as Hume's test, will give in very dilute solutions of the poison a bright yellow precipitate of arsenite of silver, which darkens on exposure to the air. Its action, however, is prevented by the presence of any free acid or alkali, by that of many saline, and of most organic matters. The latter is less delicate, and gives a bright green precipitate, known as Scheele's green; but the presence of matters mentioned above hinders its characteristic action. Either precipitate, when collected, washed, carefully dried and introduced into a test tube of very small diameter and held steadily over the flame of a spirit lamp, gives out vapours of arsenious acid, which condense on the inner surface of the tube at a little distance from the flame in the form of fine octohedral crystals.

Sulphuretted hydrogen, transmitted through an undiluted liquid in which arsenious acid is dissolved, yields its sulphur to the metal and forms orpiment, which, after boiling, to expel the excess of the gas, will be precipitated, if the liquid be not too dense or viscid, and no considerable quantity of an ammoniacal salt be present. This precipitate, when collected, washed and dried, and triturated with about three times its weight of black flux (made by submitting acetate of soda to a red heat in a covered crucible), if introduced into a small tube and heated over a spirit lamp, gives a characteristic crust of metallic arsenic.

The above are still employed as subsidiary tests, and the last more especially is one of great value; nevertheless others of more general application and greater delicacy have of late years been introduced, and are now employed in preference.

In the year 1836 Mr. Marsh discovered that whenever hydrogen is generated in a fluid containing arsenic in solution, a portion of the gas combined with the metal to form arseniuretted hydrogen, and that on burning a jet of the mixed gases, and holding a piece of porcelain or glass, in or over the flame, a spot of metallic arsenic or of arsenious acid was produced according to the distance at which it was thus kept. By allowing the flame to burn within a glass tube which is open at the ends, both of these deposits may be obtained, as well as the odour of garlic, which is characteristic of the poison. If the mixed gases be made to bubble through a solution of nitrate of silver, by means of a bent tube of German glass, the liquid is speedily blackened (Lassaigne); and if, while the gases are traversing the tube, the upper bend of the glass be heated to redness in the flame of a spirit lamp, arsenic will be deposited on the inside of the tube, in the form of a bright metallic ring, which is exceedingly volatile (Berzelius). This character will serve as an easy means of distinguishing arsenic from antimony — the only important fallacy to the test.

About ten years ago Dr. Reinsch directed attention to the fact

that arsenic may be made to quit its solutions, when the latter are acidulated with about one-sixth of their bulk of muriatic acid, and heated almost to the boiling point with some strips of clean copper foil. The poisonous metal presents itself on the surface of the copper in the form of a steel grey coating; and if the copper be washed with distilled water, dried, cut into minute fragments, and heated in a small test tube, the arsenic will volatilise and condense in the upper part of the tube as a white or black ring. The continued application of heat will convert the whole of the arsenic into a white crystalline sublimate; and if this be dissolved in pure water, it may be recognised by the liquid tests already mentioned. This method is very delicate, for, according to Dr. Christison, it will serve for the discovery of the 250,000th part of arsenic in solution, or, according to Dr. Taylor, for the 2000th of a grain of arsenic dissolved in thirty drops of water. Dr. Letheby has proposed a modification of this test, which appears to increase its delicacy by combining with it the advantages of Marsh's process. He recommends that the arsenical fluid should be acidulated with a few drops of nitric acid, and that fragments of zinc should be employed in the place of copper. As in the last case, the submersed metal acquires a coating of the poison; and, having been washed with distilled water, the zinc may be employed in Marsh's apparatus for the generation of arseniuretted hydrogen.

When arsenious acid is contained in organic fluids or mixed with solid organic matters, very few of the preceding tests are applicable for the recognition of the poison. Under these circumstances the material must either be broken down with boiling sulphuric acid, and then subjected to Mr. Marsh's process; or it must be heated with dilute muriatic acid, filtered, and treated in the way proposed by Dr. Reinsch; or it must be acidulated with aqua-fortis, and submitted to the operations suggested by Dr. Letheby. Of all these processes, perhaps that recommended by Dr. Reinsch is the most easy and satisfactory. Care, however, must be taken that the hydrochloric acid employed does not contain a particle of the suspected poison. This precaution is especially necessary, from the fact that commercial muriatic acid is frequently contaminated with a large proportion of arsenic.

Mercury and its Compounds.—Toxicologists are not agreed respecting the poisonous nature of metallic mercury; for, while, on the one hand, there are many undoubted instances of its having been administered in large quantities without producing injurious effects, so, on the other, it is equally certain that very small doses of the metal have frequently occasioned most serious consequences. It is probable, however, that this discrepancy may be completely reconciled in the manner suggested by Dr. Pereira: viz., that as long as mercury retains its crude metallic form it is inert; but that when it becomes finely divided, or combines with oxygen in the alimentary canal, it acquires activity. If this opinion be correct, it is evident that the more minutely the metal is divided, the

more it is liable to the chemical action of air, moisture, and saline solutions, and the more readily will it become poisonous. This view of the case will serve to explain how it is that persons exposed to the influence of mercurial vapour, as, for example, the miners and distillers of the metal, looking-glass makers, water-gilders, and manufacturers of thermometers and barometers, are all subject to mercurial disease. Observation has also shown, that the higher the temperature at which such operations are carried on, the more quickly and seriously do the workmen become affected. The symptoms which have been manifested on these occasions are the following:—At first there is a general debility of the system, characterised by emaciation, loss of appetite, and diarrhoea, accompanied with colic. After this the hand becomes unsteady, the muscles of the arm lose their power, and are affected with a kind of convulsive trembling, which is communicated to the whole body. There is also much disturbance of the cerebral organs, manifested by giddiness, loss of memory, and confusion of intellect. The pulse is usually very quick and irregular, and the surface of the body hot and dry. In most instances the gums acquire a deep blue line around their edges; they become red, swollen, and tender; and finally the patient is attacked with profuse salivation, and, perhaps, with gangrene of the mouth, of which he speedily dies. In other cases the fatal result is brought about by an aggravation of the cerebral symptoms, as by delirium and coma, or convulsions. A remarkable case, in illustration of the effects of mercurial vapour on the animal system, is frequently referred to by toxicologists. The following is a summary of it, from the work of Dr. Paris. In the spring of the year 1810, the *Triumph* man-of-war removed a quantity of quicksilver from a wrecked vessel, off Cadiz. The metal was contained in leather bags, which, on being stowed in the hold, soon rotted, and let out about three tons of mercury. In a short time many of the crew became affected with disorder of the bowels, partial paralysis, and ptyalism; and in three weeks no less than 200 of the men were in a state of salivation. Every means were taken to remedy the evil; but in the course of a month two of the men died—one with both cheeks in a state of mortification, and the other with two-thirds of his tongue and the whole of the lower lip in a similar condition. Mr. Plowman, the surgeon of the vessel, informed Dr. Paris that nearly all the poultry, sheep, pigs, mice, goats, cats, a dog, and even a canary bird, were likewise destroyed by the vapours of the metal; and it appears that the interior of the vessel was covered with a black powder, probably the oxide of the metal, and that the copper bolts were mercurialised.

All the preparations of mercury, excepting, perhaps, the sulphurets, are poisonous, though they are not equally so; for experience has shown that the proto-salts of the metal are less active than the per-, and the soluble more dangerous than the insoluble. Mialhe is of opinion that every active preparation of mercury, when administered internally, is converted into

the bichloride. This, he thinks, is effected by the chemical action of the chlorides contained in the alimentary canal. Whether this view of the case be correct or not, it is certain that those preparations of mercury which are most easily reacted on by the salts in question, are the most poisonous.

Among the compounds of mercury that deserve attention are the *black*, or *protoxide*, which exists in black wash, blue pill, in the preparation of mercury and chalk, and in the ointment, liniment, and plaster of the metal; the *red* or *peroxide*, which constitutes yellow wash and red precipitate; the *proto-chloride*, or calomel; the *bichloride*, or corrosive sublimate; and the *ammonio-chloride*, or white precipitate; the *black sulphuret*, or Ethiop's mineral; the *bisulphuret*, or vermilion; the *iodides*, *nitrates*, *acetate*, and the *sulphate*, or Turbith mineral.

Dr. Christison has classified the effects of mercurials into three varieties. "In one variety the sole or leading symptoms are those of violent irritation of the alimentary canal. In another, the symptoms are at first the same as in the former, but subsequently become united with salivation and inflammation of the mouth, or some of the other disorders incident to mercurial erythysm, as it is called. In the third variety, the preliminary stage of irritation in the alimentary canal is wanting, and the symptoms are, from beginning to end, those of mercurial erythysm in one or another of its multifarious forms. The first variety of poisoning with mercury is remarked only in those who have taken considerable doses of it in soluble salts, particularly corrosive sublimate. The second is produced by the same preparations. The third may be caused by any mercurial compound."

A consideration of the effects produced by corrosive sublimate will enable us to form a very just conception of the two first varieties referred to by Dr. Christison; and the account already given of the symptoms occasioned by the inhalation of mercurial vapour, will serve as a description of the last.

When a large dose of bichloride of mercury is taken, the effects immediately manifest themselves, for there is a powerful sharp metallic taste in the mouth, and a burning sensation in the throat, accompanied with a feeling of suffocation or constriction about the glottis. This pain rapidly extends to the stomach and abdomen, and it is aggravated by pressure. After the lapse of a few minutes, nausea and vomiting supervene, and these are quickly followed by diarrhœa. The matters at first discharged from the stomach are usually mixed with stringy masses of coagulated mucus; but after a short time blood is likewise ejected. The same is the case with the matters passed from the bowels. From the very onset of the attack the countenance is always expressive of great anxiety; sometimes it is pale and contracted, but more frequently it is swollen and flushed. The surface of the body is generally cold, and covered with clammy perspiration. At first the pulse is small, quick, and irregular; but, as the symptoms advance, it almost ceases

to be perceptible, and finally death is ushered in by deep syncope, by profound coma, and frequently by a few slight convulsions. These effects usually run their course in from fifteen to thirty hours. In some cases, however, they have been terminated in as short a time as three hours, and in others they have been extended over a period of several days. When this occurs, the patient is generally the subject of profuse salivation, and he likewise suffers from an almost total suppression of urine. It is not very probable that these effects can ever be confounded with the symptoms produced by arsenic; for in the latter kind of poisoning there is little or no taste perceived, the burning in the throat is not so immediate, the symptoms are nearly always delayed for some time, the vomited matters are never charged with coagulated mucus, and rarely with blood; and, finally, the termination of the case is not so sudden.

In those cases where corrosive sublimate has been administered in small and divided doses the effects are more slowly developed, and are, therefore, similar to those produced by the milder preparations of mercury. At first there are pains, like colic, in the abdomen, and these are aggravated by pressure: there is also a feeling of nausea, with irritability of the stomach, and great disposition to vomit: the bowels are relaxed, and the whole system is debilitated; there is a peculiar feeling of depression, accompanied with frequent sighing. A brassy taste is perceived in the mouth, the breath acquires a foetid odour, the gums look red and spongy, they feel tender, the teeth become loose, and finally salivation is produced. This is followed, or even associated, with palsy and convulsive trembling of the limbs. In some instances the mouth and lips become gangrenous, slow fever and marasmus set in, and in this exhausted condition the sufferer dies.

The salivation produced by mercury is regarded by many practitioners as the most important evidence of the effect of this poison; but it is proper to remark that there are many cases on record in which this symptom has been manifested after the administration of other drugs, as, for example, the preparations of lead, copper, bismuth, antimony, arsenic, gold, iodine, prussic acid, oil of vitriol, digitalis, colchicum, cantharides, and croton oil: besides which, it has often been proved that salivation may arise from spontaneous causes.

Another fact of great interest to the toxicologist is the following: that there is great diversity, or rather irregularity, in the appearance of this symptom even when it is produced by the action of mercury; for, in some cases, it has been noticed that the most profuse salivation has arisen from the exhibition of a very small dose indeed of some mild mercurial, especially in those diseased conditions of the system which are characterised by albuminous urine; and, at other times, this symptom has not presented itself, although a large and fatal dose of some more active preparation has been administered. This irregularity is usually attributed to

idiosyncrasy; and it is deserving of attention, from the fact that it might on one hand be made the basis of a false, though serious, charge of *mala praxis*, and on the other it might be the means of leading the unwary to a wrong conclusion respecting the nature of a case of actual poisoning by mercury.

When salivation manifests itself from the action of mercury, it usually commences within a few days after the administration of the poison. In some cases, however, it has appeared in a few hours, and in others it has been delayed to a most distant period. Toxicologists have also noticed that this symptom is liable to recurrence after the lapse of many weeks, notwithstanding that no mercury of any description has been given in the interval. These facts have, on several occasions, been made the subjects of inquiry in courts of law: it is, therefore, a matter of considerable importance to be able to distinguish mercurial ptyalism from every other form of salivation. "In general," says Dr. Christison, "mercurial salivation may be easily distinguished from all the preceding varieties by an experienced practitioner. If its progress has been traced from the first appearance of brassy taste and fetor to the formation of ulcers and supervention of ptyalism, no attentive person can run any risk of mistaking it. Its characters are also quite distinct at the time salivation just begins: the fetor of the breath and sponginess and ulcerations of the gums, at this stage, distinguish it from every other affection. But if the state of the mouth is not examined till the ulcers have existed several days, the characters of the mercurial disorder are much more equivocal. They cannot be distinguished, for example, from some forms of idiopathic ulceration of the mouth connected with unsoundness of the constitution, and characterised by extensive sloughing, ptyalism, and gangrenous fetor. In particular, they cannot be distinguished from the disease called *cancrum oris*."

The preparations of mercury are all poisonous, however they may gain access to the body. This is proved by many well-authenticated cases, and by the experience of every medical practitioner. Mr. Ward, of Bodmin, has recorded two instances in which fatal effects were produced by the application of an ointment containing corrosive sublimate to the surface of the body. In these cases there was vomiting and purging of bloody matters, as if the poison had been admitted into the stomach — showing that mercury, like arsenic, has a tendency to exert its action on particular organs. Dr. Taylor has also mentioned a case in which a gentleman, M. Cloquet, the anatomist, was attacked with symptoms of mercurial poisoning, in consequence of his having plunged his hand into a jar containing a solution of corrosive sublimate, for the purpose of removing an anatomical preparation. "He did not wash his hand afterwards; and, in about eight hours, he was attacked with severe pain in the abdomen, constriction of the chest, painful respiration, thirst, nausea, and ineffectual attempts at vomiting. Under the use of diluents, these symptoms were

removed; but, for eight days, he suffered from pain in the epigastrium."

As to the quantity of corrosive sublimate that may be regarded as a fatal dose, it is difficult to speak with certainty, though it is probable that about two or three grains may be so considered. In the case of the Queen v. Robertshaw, which was tried at Carlisle Lent Assizes, there is every reason to believe that this quantity proved fatal to an adult. Nevertheless, it must also be remembered that very large doses, as, for example, from one to eight drachms, of this poison have been taken without producing the like results. In these cases, however, the matters were speedily discharged from the stomach, which was full of food, and remedies were promptly administered.

Treatment.—An emetic is rarely necessary in a case of acute mercurial poisoning, from the circumstance that the corrosive drug effects its own discharge from the stomach. Besides which, it is of the greatest importance that no time should be lost before the practitioner administers such remedies as will quickly neutralise the corrosive action of the poison on the stomach. This is best effected by means of eggs beaten up with about three times their bulk of water. The antidote, next in value to this, is flour and water mixed to the consistence of gruel; but, should neither of these remedies be at hand, it might perhaps be possible to obtain an abundant supply of milk, of which the patient may drink freely. All these liquids act by forming insoluble compounds with the poison, and thus rendering it comparatively inert. In most cases, the stomach is so irritable that it will discharge the albuminous compound as soon as it is produced; but if it does not do so, then it is proper to administer a mild emetic, in order that the whole of the poison may, if possible, be removed from the alimentary canal. It is very doubtful whether the stomach-pump ought ever to be employed in such cases as these; from the circumstance that much irritation is sure to be produced by the pressure of the tube against the walls of the corroded and inflamed stomach. The after treatment of the patient consists, essentially, in the administration of demulcent and nutritive fluids; by which means the irritation of the alimentary canal will be soothed, and the strength of the patient supported. In some cases, it may be necessary to combat local inflammation of the bowels by the aid of a few leeches to the abdomen.

In chronic poisoning by the mercurials, it is advisable that the sufferer should be removed as speedily as possible from the influence of the exciting cause. He should be placed where he can have the benefit of a pure cool atmosphere and a nourishing diet; and, if the bowels are not in an irritable condition, it is proper to submit them to the action of a few mild aperients. Many remedies have been recommended as specifics in cases of profuse salivation, as, for example, iodine, sugar of lead, opium, and tartar emetic; but it is probable that more advantage will be derived

from the curative powers of nature, than from any of these so-called antidotes.

The post-mortem appearances in cases of acute mercurial poisoning, especially when the drug has been administered in a soluble form, are chiefly confined to the alimentary canal. The lining membrane of the mouth, œsophagus, and stomach is generally found of a dull bluish white colour; it is also softer than natural, and in most cases it is so much corroded that it may be raised in long strips from the sub-mucous tissue. In addition to this, the vascular parts of the membrane are highly injected, and are often of a purple colour from extravasated blood. The interior of the intestinal canal is usually red from the effects of active inflammation, and the vessels on the exterior of the viscera are always distended with dark coagulated blood. Occasionally the whole of the interior of the alimentary canal has been found of a dull grey tint, from the chemical action of the poison; and, still more rarely, the tissues of the stomach have been so much corroded that they have given way with the weight of their contents. When death has been delayed for several days, it is commonly remarked that the lower part of the intestine is more affected than the upper; and it appears that this happens irrespective of the manner in which the metal has gained access to the body. In these cases the continued action of the poisons on the coats of the stomach and intestines may also have produced a destruction of their tissues, and have occasioned a number of large gangrenous ulcers, looking like those which are observed in bad cases of dysentery.

Tests for mercurial compounds. — All the soluble preparations of mercury may be distinguished by one of two sets of characters. The *proto-salts* give a black precipitate with the alkalis, a brownish black with sulphuretted hydrogen, a white with common salt, and a greenish yellow with a weak solution of iodide of potassium. The *per-salts* of the metal, of which corrosive sublimate is an example, occasion a yellow precipitate with the caustic alkalies (soda and potash), a white with ammonia, a brownish black with sulphuretted hydrogen, and a yellow, which rapidly becomes scarlet, with iodide of potassium. In addition to these characters, all the soluble salts of mercury have the faculty of producing a mercurial stain on a strip of clean copper, or on a piece of gold foil, to which a bit of zinc wire is attached. They are also reduced by proto-chloride of tin, forming a black precipitate of finely divided metal; and, lastly, if they are mixed with five or six times their bulk of well-dried carbonate of soda, and then heated in a small glass tube, they are decomposed and evolve a metallic sublimate of small globules of mercury.

The insoluble salts are likewise easily distinguished by the last-mentioned character; or they may be made soluble by boiling for a short time with dilute muriatic acid, to which a *very little aqua-fortis* has been added, and then tested for corrosive sublimate, or reduced by proto-chloride of tin.

When the soluble salts of mercury are mixed with organic matter, they frequently combine with it and form insoluble compounds, in which the quicksilver is at last reduced. This is the case with many astringent fluids, such as tea and coffee, with the volatile and fixed oils, with albumen, gelatin, and indeed with most animal substances. In seeking, therefore, for mercury in the fluids and tissues of the body, it is important that these facts should be remembered, or the operator may fail to discover the poison. Many processes have been proposed for the recognition of corrosive sublimate in organic mixtures; but one of the best has been contrived by the late Dr. Frampton. It is to be conducted in the following manner:—Boil the contents of the stomach with water slightly acidulated with muriatic acid; then filter, and boil again for a short time with a little granulated silver; allow the liquid to stand for a few minutes, in order that the metal may subside; then pour off the supernatant liquor; wash the precipitate first with ammonia to remove all trace of chloride, then with a solution of potash to dissolve organic matter; and, finally, drench it with clean water, dry it, and heat it in a small glass tube, so as to obtain the quicksilver in the form of a metallic sublimate. By this means very minute traces of the poison may be readily discovered. Dr. Christison has recommended that the mercury should be precipitated from its solution by means of proto-chloride of tin; but the objections to the process are: first, that it is rather difficult of management; and, secondly, that it complicates the case by introducing another poisonous metal. Dr. Taylor advises that, when the quantity of organic liquid to be operated on is large, the mercury should be obtained from it by means of a galvanic test. This is effected in the following manner:—Cut a few slips of gold foil, of about one inch in length and one-eighth of an inch in width, wind around each of them a strip of finely laminated zinc, suspend them in the acidulated liquid for a few hours, and observe whether the gold become tarnished or mercurialised; if so, remove them, wash them with ether or potash, and then with distilled water, dry them in the air, and, lastly, expose them to heat in a glass tube, in order that the mercury may be volatilised and collected in globular form. Orfila has suggested that the contents of the stomach should be treated with a quantity of ether, which liquid has the power of removing corrosive sublimate from its aqueous solution. On allowing the mixture to stand, the ether floats and may be separated by decantation or any other means. The ethereal solution is next to be evaporated to dryness, treated with distilled water, and tested for corrosive sublimate. The advantage of this process is, that it removes all doubt concerning the nature or chemical composition of the poison; but its disadvantage is, that it is not a delicate process.

When bichloride of mercury is to be discovered in the tissues or solid contents of the alimentary canal, it may be done either by boiling them with liquor potassæ, which dissolves the animal

matter, and leaves the mercury in the form of a black deposit; or it may be heated with muriatic acid, and then submitted to the action of granulated silver in the way just described.

Lead and its Compounds. — All the preparations of lead, except the native sulphuret, exert a poisonous action on the human body; and the degree of virulence appears to be in proportion to their solubility in the fluids of the animal system. The late Dr. Anthony Todd Thompson was of opinion that carbonate of lead was the only poisonous salt of this metal, but there are no good grounds for entertaining such an hypothesis. The compounds of lead which have been best studied are the *acetate* and *sub-acetate*, the *oxides* (massicot, litharge, and red lead), the *carbonate* or white lead, the *chromate*, and a few others, which are employed as pigments, not only for common decorative purposes, but also for the coloration of various articles of confectionery. In addition to these, the *iodide*, *chloride*, and *sulphite* of the metal have, in a few instances, been made the subjects of medico-legal inquiry.

Two classes of effects have been witnessed in cases of lead poisoning. In one the symptoms are those of an active irritant, and in the other they are very similar to the results occasioned by the slow action of mercury. The former of these are manifested whenever a large dose of a soluble salt of lead has been taken. They are characterised by pain in the mouth, throat, and stomach, followed by vomiting, thirst, colicky pains in the abdomen, and speedy collapse, during which the countenance looks pale and anxious, the surface of the body becomes cold and clammy, and the pulse weak and fluttering. At first there are painful cramps in the legs and thighs. These are succeeded by great weakness of the limbs, often amounting to actual paralysis; and, finally, death is ushered in with insensibility and coma. The second class of effects is observed when the patient has recovered from the preceding, or when he has been submitted to the action of small and repeated doses of the metal. These effects are usually known by the name of *colica pictonum*, or lead palsy, and they are witnessed in all those cases where workmen are constantly engaged in the manufacture or use of lead products; as among painters, white lead and litharge makers, shot manufacturers, sheet-lead rollers, and the preparers of acetate and sub-acetate of the metal. The symptoms commence with general loss of health, the countenance looks pale and sallow, the gums acquire a blue line round their edges, the appetite fails, the secretions are checked, and the bowels are obstinately constipated. In addition to this, there are frequent attacks of colic, which are relieved by pressure on the abdomen; and after a time, which varies in its duration according to the circumstances of the case, a train of nervous symptoms make their appearance. They usually commence with weakness in the limbs—the hand becomes unsteady, and the feet trail upon the ground; very soon the extensor muscles of the upper extremity lose their power, and the hand and fingers are observed to be bent inwards.

During the whole of this time there are wandering pains in the head; the sufferer is heavy and disposed to sleep; he has loss of memory, confusion of intellect, frequent attacks of giddiness, and occasionally a few convulsive tremors, like epilepsy. Then follow—coma, a condition simulating apoplexy, and death. This result, however, may not occur until after the lapse of many weeks, or even months, from the commencement of the attack.

The quantity of lead salt required to produce the first of these effects is not accurately determined; for persons have recovered after taking as much as an ounce or so of the acetate; and physicians are aware that from 30 to 40 grains of this salt may be daily given, in divided doses, without injury to the system. The chronic effects have been known to manifest themselves even when very small quantities of lead have habitually gained access to the body. Mr. Herepath has reported, that, in a case which came under his own observation, water which contained only one grain of the metal in seven gallons produced the usual symptoms of lead poisoning; and in the case of the late ex-king of the French and his suite, while at Claremont, the disease was occasioned by the use of water which did not contain more than one part or grain in 70,000 (a gallon). Dr. Smith, of Aberdeen, has devoted attention to this subject, and he states that water becomes dangerous when it contains as little as one-tenth of a grain of lead in the gallon. These results show that the chronic effects of lead may be produced by very small doses of the poison, provided that they are frequently administered.

As to the time at which the symptoms manifest themselves, this is liable to great variation, and is dependent on the habits of the patient, on his idiosyncrasy, and on the manner in which the poison gains access to the body. In the Claremont case it is probable that the first symptoms were produced within a week or two after the water had been used, though a few of the patients were not attacked until after the lapse of one or two months. A case is recorded in the *Pharmaceutical Journal*, by Dr. Letheby, in which a child of six years of age took daily two or three doses of the fifth of a grain of sugar of lead for the cure of whooping-cough. In one week symptoms of poisoning came on, and in nine weeks he was dead. Painters, however, and the workers of lead products, are sometimes enabled to pursue their calling for years without showing any symptoms of lead disease.

The treatment that is found most efficacious in acute lead poisoning, is the free use of some alkaline or earthy sulphate (Glauber or Epsom salts), the acid of which combines with the poisonous metal, and produces a compound which is nearly inert. After this, any mild diluent, such as milk, gruel, white of egg and water, may be plentifully administered; and, if vomiting has not been freely excited, it is advisable to give an emetic or to make use of the stomach-pump. In case of chronic poisoning, the best treatment that can be followed is, first to remove the patient away from the

exciting cause; to give him the benefit of fresh air, good diet, and frequent ablutions over the whole body; then to restore the activity of the bowels by mild aperients, to submit the palsied limbs to the occasional influence of electricity, and to endeavour to promote the elimination of the poison by means of diuretics and small doses of iodide of potassium. As prophylactics in these cases, it is advisable that all persons exposed to the influence of lead disease should be exceedingly cleanly in their habits; they should now and then take a bath, containing a little sulphuret of potassium, in order to show where the poison exists in the skin, and they should drink freely of water containing a very little iodide of potassium in solution or a few drops of dilute sulphuric acid. When it happens that the water collected in lead cisterns becomes impregnated with this poison, it may be purified by filtration through sand and animal charcoal.

The post-mortem appearances, in cases of acute poisoning, are those of an active chemical irritant. The stomach will be inflamed, and perhaps corroded, by the poison; and the intestines may contain a quantity of dark slimy mucus. In chronic cases, the surface of the body is generally of a yellow tint, the tissues are wasted, the gums are of a blue or purple colour, and the stomach and intestines are usually pale and empty. It has been noticed, in most of these cases, that the alimentary canal has been contracted in some parts and dilated in others. This has resulted from the paralysing influence of the poison on certain parts of the muscular coat, whereby it becomes distended by wind or fæces. Lastly, the lungs are always congested, and the blood all over the body is of a dark venous colour.

Chemical reactions of this metal.—Like zinc and copper, lead is frequently employed for the collection and distribution of water and other liquids; consequently, it is of importance that we should be acquainted with the chemical properties of this metal. Experiment has shown that lead is not at all affected either by pure dry air or by water that is deprived of atmospheric oxygen, notwithstanding that it is readily attacked by the combined influence of these two agents. When, therefore, lead is freely exposed to the action of air and pure water it rapidly absorbs oxygen, and produces a white powder—the hydrated oxide of the metal. A part of this quickly combines with carbonic acid, which it gets from the atmosphere, and falls to the bottom of the vessel in the form of a pulverulent or semicrystalline solid. A portion, however, of these compounds remains suspended in the liquid, and a still smaller quantity undergoes solution; for it appears, from the observations of Fresenius, that the hydrated oxide is soluble in about 10,000 parts of water, and the hydrated carbonate in 50,000. It is on this account that rain and snow waters invariably attack lead, and form poisonous liquids. Experience has also shown that certain mineral waters of unusual purity act in a similar manner. According to Dr. Christison and others, this is actually the case

with the waters of Banffshire, Dumfriesshire, Tunbridge, and the Dee, at Aberdeen, which contain respectively the $\frac{1}{16300}$, $\frac{1}{22000}$, $\frac{1}{38000}$, and $\frac{1}{38000}$ th of solid saline matter.

All observers have noticed that the presence of saline matters exerts an influence in checking this action, and it has been remarked that those salts act most energetically as preservatives, whose acids form insoluble compounds with the metal. Thus it is that phosphates and carbonates are most protective; chlorides, nitrates, and acetates least; while the sulphates are intermediate. It must be remembered, however, that saline matters do not always entirely check the action of water on lead, but merely delay it; for the Honourable Mr. Napier, and others, have shown that certain well-waters, which contain an abundance of earthy salts, have rapidly corroded the lead pipes and chambers of the pumps employed in distributing them. Fresenius has also proved that sulphate of lead is soluble in about 23,000 parts of water, and the carbonate in about 50,000. Dr. Christison, however, states that water containing the $\frac{1}{12000}$ th part of these salts, may be safely conveyed through leaden pipes, though it would be dangerous to store it in leaden cisterns, and he adds that this is actually the case with the water of Edinburgh. Again, he remarks, that when water contains about the $\frac{1}{3000}$ th part of these salts, it may then be safely received into such cisterns, and kept there for any reasonable time. This is proved to be true by the facts observed at the house Phantassie, in East Lothian, and by the circumstance that the water of the river Thames, which contains about $\frac{1}{7000}$ th of saline matter, may be exposed for years to the influence of lead without becoming charged with a particle of the poison.

Although the great agents concerned in the corrosion of lead are atmospheric air, moisture, and carbonic acid, yet it appears, from numerous well-conducted experiments and observations made by Christison, West, Fisher, and others, that galvanic action is often a very potent cause of it. Mr. West has recorded, that when lead pipes have been joined to iron ones the lead is soon acted on, and he gives a remarkable case in proof of it. Dr. H. De Mussy, the medical attendant of the French at Claremont, is also of opinion that the danger in this case arose from the fixing of an iron cistern to the lead pipes, for before that was done the water was drunk with impunity. Dr. Christison has observed that the lead is always most energetically acted on in the neighbourhood of the solder; and he states that metallic impurities, or inequalities, in the chemical composition of the lead itself may cause corrosion. It follows from this, that waters which contain a large proportion of saline matter may act injuriously, from the circumstance that they promote galvanic action. This will explain how it is that many natural waters, highly charged with calcareous salts, as, for example, that of Hampstead, will in many instances quickly corrode the cisterns in which they are stored. Dr. Christison informs us that the water supplied to Lord Aberdeen's estate

at Peterhead became impregnated with lead, and caused serious disease in the family, notwithstanding that it contained as much as the $\frac{1}{4400}$ th of saline matter; and, in another case, it acted on the metal when it contained as large a quantity as the $\frac{1}{77}$ th part of calcareous salts.

Finally, it must be mentioned that most acid matters rapidly attack the surface of lead. This is especially the case when the salts so formed are of a soluble nature. Sulphuric acid slightly prevents corrosion; but muriatic, nitric, carbonic, acetic, lactic, tartaric, citric, and malic acids greatly increase it. From this circumstance it is not unusual to find that wines, cider, milk, rum, pickles, and other acid preparations, acquire a poisonous property when they have been made or collected in lead vessels; and cases are on record in which lead colic has spread like an epidemic, attacking the inhabitants of large districts, and producing many fatal results from this cause.

The soluble salts of lead are known by their sweet taste, by their giving a white precipitate with the alkalis and their carbonates, with prussiate of potash, and with the soluble sulphates. They also give a black precipitate with sulphuretted hydrogen, and a yellow with iodide of potassium; lastly, they all occasion a deposit of metallic lead on a piece of zinc immersed in them. The insoluble salts are easily reduced to metallic lead when they are mixed with carbonate of soda, and heated on charcoal before the blowpipe. The particles of lead thus obtained may be dissolved in nitric acid, and then tested with the foregoing re-agents.

In searching for lead in the tissues of the body, it is proper to boil them for a short time with water acidulated with acetic acid, then to filter and test. If this liquid be turbid, sulphuretted hydrogen will throw down all the metal in the form of a black precipitate, which, when collected and heated with a drop or two of nitric acid, then diluted and filtered, will give a solution which may be readily tested. When the tissues are to be further examined, they are to be ignited in an unglazed crucible, powdered, treated with a little nitric acid, boiled in water, filtered, carefully evaporated almost to dryness, redissolved in distilled water, and then tested for lead.

Phosphorus is not very often employed in this country for criminal purposes, notwithstanding that it is a very active poison; but it is occasionally used in the fabrication of pastes for the destruction of vermin, and within the last twenty years we have been made acquainted with the chronic effects of it, in the case of those who are employed in the manufacture of lucifer matches. These effects have been carefully studied, first, by M. Lorindser of Vienna, and more recently by Drs. Heyfelder, Geist, and Von Bibra of Nürnberg, M. Strohl of Strasburg, Dupasquier of Lyons, Helft of Berlin, Roussel of Paris, Taylor of Nottingham, and Messrs. Stanley and Simon of this city. The malady presents itself among those who are habitually exposed to the action of

phosphorus vapour, and it most easily affects the scrofulous, the weakly, and those who are suffering from carious teeth. The symptoms which characterise the disease are, first, a loss of general health; the appetite fails, the bowels become affected with colic and diarrhœa, the body gradually wastes, and the countenance looks sallow and anxious. Soon after this the sufferer complains of frequent attacks of toothache, the gums look red and swollen, the teeth become carious, and in some instances fall out. The face swells; the gums, spongy and red, retire from the teeth, and give exit to a most unpleasant smelling pus. One or more abscesses form in the jaw, which break, and discharge a similar kind of putrid matter. By this means several sinuses are produced, the jaw is exposed, and when probed it is found to be rough and diseased. Portions of bone now exfoliate; and, although nature endeavours to repair the injury by depositing new osseous matter, yet the whole jaw soon becomes involved in the mischief, and in the end dies. Such a condition of things cannot long exist without seriously affecting the general health of the sufferer. He, therefore, becomes irritable and emaciated, is subject to constant attacks of diarrhœa, which weaken him excessively; then to a species of low fever; and, after lingering for a considerable time, he is worn out by the malady, and dies. This result may occur in the course of a few weeks, or it may be delayed for a period of several years. There is also the same variation in the time at which the first symptoms manifest themselves. This is perhaps dependant on the habits of the individual, and on the constitutional tendency to disease. It has, however, been frequently noticed that those who suffer from carious teeth are most liable to an early attack. The Prussian government has, therefore, just issued a protest against the employment of such persons in lucifer factories. In the generality of cases, the disease presents itself in from two to five years after commencing the business. Mr. Stanley states that his patient began to suffer in about two years and a half. Dr. Geist records a case in which it came on in three years and a half, and Dr. Taylor of Nottingham, in six years; while, in the case reported by Mr. Simon, it did not present itself for a space of twelve years. The pathology of this disease is not conclusively determined, though the general opinion is, that the phosphoric vapours attack the exposed jaw through the carious tooth, and in this way excite morbid action.

The effects of crude phosphorus or its solutions on the human body are very distressing, for the poison becomes oxydised in the system, and forms acid compounds, which are exceedingly caustic and irritating. There is pain in the stomach and intestines, a vomiting of matters that have the odour and taste of garlic; the breath likewise exhales a similar odour, and is in some cases luminous in the dark. The respiration is quickened, the pulse accelerated, and the brain generally excited. These effects may kill in the course of a few hours, especially if the poison have been

administered in a soluble form. At other times the patient is attacked with inflammation of the bowels or lungs, and the death is delayed for several days. The quantity of the poison necessary to produce such results is very small; it is probable that from one grain to a grain and a half is sufficient.

The treatment to be adopted in cases of acute poisoning by phosphorus is the quick administration of an emetic, then to give plenty of water and a little magnesia or chalk. The succeeding disease is to be combated by antiphlogistic remedies.

The chronic effects of the poison are to be removed by attention to diet, cleanliness, good air, and all other means that will support the strength of the patient. The necrosis of the jaw can only be remedied by natural exfoliation or a surgical operation. The prophylactics are cleanly habits, effective ventilation, the use of mild alkaline drinks, and the employment in the factory of certain hydro-carbons, which check the volatilisation of the poison, as naphtha or oil of turpentine. Vogel and Graham have shown that these liquids check the slow combustion of phosphorus, the former in the proportion of about 1 part to 1820 of air, and the latter to 4444. A little turpentine, therefore, put into saucers, and distributed about the building, would doubtless act as a check on the disease. Of late Dr. De Vry and others have recommended that the red involatile form of phosphorus (Schrotter's) should be employed in the manufacture of lucifer matches, for they believed that it has not the power of exciting the disease.

The tests for phosphorus are its odour, its luminosity in the dark, and its great combustibility. These characters will serve to distinguish it from all other substances: and, from the circumstance that it is soluble in ether, oil, and bisulphuret of carbon, it may be readily removed from most organic matters.

The oxides of Carbon are all poisonous in their nature. One of them (oxalic acid) has already been referred to; but there are two others which remain for consideration. Both of these compounds are gaseous; one is named *carbonic oxide*, the other *carbonic acid*. Little is known concerning the action of the former on the human subject, though Professor Tourdes has found that it kills rabbits in about twenty-three minutes, and that it acts upon them in the same way as carbonic acid. This gas is produced in large quantities when the vapour of water is passed over ignited charcoal, and this process is frequently adopted for the purpose of increasing the bulk of ordinary coal gas. It is also generated during the combustion of coke and other forms of carbon.

Carbonic acid, the choke-damp of miners, and *spiritus lethalis* of the ancients, is a more common poison than the preceding. In some localities it is abundantly evolved from fissures in the earth. This occurs in many mines, in wells, in the *Grotto del Cane*, near Naples, and in the valley of Java. It is also a product of fermentation, and is therefore found in brewers' vats. It is given off from lime-kilns during the ignition of chalk and limestone. It

is likewise formed by the combustion of charcoal and other carbonaceous bodies, and it is generated in large quantities when many persons are crowded together. The symptoms produced by this poison vary with its degree of dilution. If the gas be inhaled in nearly a pure state, it occasions a pungent sensation in the nose and throat, spasm of the glottis, and almost instantaneous insensibility. When it is diluted with about six times its bulk of atmospheric air, the effects are not so speedy in their progress; for there is first a sense of weight in the head and a tightness and throbbing of the temples, then follow giddiness, ringing in the ears, perhaps slight delirium, and a great tendency to sleep. The limbs cease to obey the will, the somnolency becomes more deep, it passes into coma, and then into death. The action of the heart is at first accelerated, but it soon becomes weaker and slower. The lips are purple, the nails blue, and the superficial vessels of the face and body gorged with black blood; the eyes are prominent and glistening, and the features are somewhat distorted, perhaps convulsed. These effects might easily be confounded with apoplexy. The time of death is subject to variation, though it usually occurs in the space of a few hours.

The quantity of gas in the air which is necessary to produce these effects is somewhere between three and five per cent.; a mixture of ten per cent. will not always extinguish a taper, though it will destroy animal life; and the embers of a chafing dish will cease to burn when the atmosphere becomes charged with fourteen per cent. of the gas. From this it is evident that the test of a lighted taper, the usual means of recognising the dangerous proportions of this gas, is not a good one. In fact, it is highly probable that much of the headache and other inconvenience which we suffer from crowded assemblies, such as theatres and ball rooms, are produced by the inhalation of carbonic acid generated by the people themselves, and by the very lights which are burning so brilliantly around them. Disasters of a very serious nature have frequently arisen from the stowing away of a large number of people in a small space. Two examples of this are frequently referred to—viz., the case of the dungeon at Fort William, Calcutta, where 146 persons were crowded into a room 20 feet square: they were put in at night, and in the morning all but 23 were dead. The other instance is that of the round-house at St. Martin's in the Fields. This hole was about 6 feet square; and in the year 1742, during the Gordon riots, 28 persons were thrust into it: in a few hours four of them were suffocated. Other examples of a like description might be quoted, as where slaves, or passengers, or animals, have during a storm been battened down in the holds of vessels, and in the course of a few hours perished. In all these cases, it is probable that the oxygen of the air was not so much exhausted as to extinguish a taper. Every species of stove that has not a flue connected with the chimney must be regarded with something more than suspicion; for, like a chafing dish, it is

a certain generator of carbonic acid, and may produce dangerous results.

The treatment to be adopted in cases of poisoning by this gas is, exposure to fresh air, the cold douche, artificial respiration, and moderate blood-letting.

The post-mortem appearances are those of asphyxia; the face is generally swollen and livid, the eyes prominent and glistening, the venous system gorged with black fluid blood, the lungs congested, the heart full, and the brain presenting many sanguineous points.

The tests for the gas are its great weight (1.52), its property of extinguishing a taper, of whitening lime-water, and of being rapidly absorbed by a solution of potash. By means of the last test the proportion of the poison in any gaseous mixture may be easily discovered.

Copper and its Salts. — It appears from a few cases on record that copper, in a finely divided state, as in the condition of bronze powder, or Dutch leaf, may act as an irritant poison; and it has also been noticed that the workmen engaged in copper manufactories are occasionally subject to a species of chronic poisoning or colic, like that produced by lead. All the preparations of this metal are dangerous. They operate as powerful local irritants, and sometimes as corrosives, producing pain in the mouth, stomach, and bowels, active vomiting, and subsequently great prostration of the vital powers: the matters discharged from the stomach are generally of a greenish colour. The preparations of copper, which are most likely to occasion these effects, are the *chloride*, *sub-chloride*, or Brunswick green, the *sulphate*, *carbonate*, *acetate*, and *sub-acetate*. Many of these salts are employed as pigments, or as a means of preserving the green colour of pickles; and one of them—viz., the sub- or oxychloride, is formed whenever salt food is allowed to remain for a few hours in a copper vessel. It is proper also to know that most of the vegetable acids, and all fatty substances, quickly attack copper, and become poisonous. Accidents, therefore, have frequently arisen from the careless employment of copper utensils in the preparation or preservation of food. Arsenite of copper, or Scheele's green, is a very active compound; and, from the circumstance that it is frequently made use of to impart a lively green colour to confectionery, it has on many occasions produced very serious consequences.

In cases of poisoning by the ordinary preparations of copper very little treatment is required, for the emetic qualities of these compounds generally effect their own discharge; vomiting, however, should be promoted by means of warm water, and the patient may be allowed to drink freely of any albuminous liquid.

Copper is recognised in solution by the green or blue colour of the compound, by its giving a bluish white precipitate with potash, a deep blue fluid with excess of ammonia, a violet with prussiate of potash, and a black with sulphuretted hydrogen; besides which, copper is thrown down, in a metallic state, by immersing an iron

rod in its acid solutions. Copper may be extracted from the tissues by incineration, digestion in weak nitric acid, supersaturation with water of ammonia, and filtration. By this means a blue liquid is obtained, which holds the copper of the tissues in solution and none of the iron.

The *Compounds of Tin* are active poison, and one of them — viz., the *bichloride*, is very accessible. It goes by the name of dyers' spirit, or spirit of tin, and is extensively employed for the purpose of brightening colours and fixing them on fabrics. This compound is a powerful local irritant, and as such it operates on the animal body. Its antidotes are magnesia, white of egg, and flour and water. It is recognised by its caustic acid taste; by its giving white gelatinous precipitates with the alkalies, and with prussiate of potash; and by its producing a yellow deposit with sulphuretted hydrogen. This character might be confounded with an arsenical reaction, were it not that the precipitate is distinguished from orpiment by its insolubility in liquor ammoniac.

The last of the metallic poisons deserving of notice is *Zinc*. This metal is so largely employed for roofing houses, making cisterns, and forming vessels for the collection of common beverages, that it is desirable that we should be acquainted with its chemical reactions. Like lead, it is not attacked by either pure air or pure water, but it is affected by the combined influence of both these agents. In a damp atmosphere zinc soon becomes covered with a white, or greyish-white, film of the hydrated oxide; and, if carbonic acid be present, it is converted into the hydrated basic carbonate. These compounds are quite insoluble in water, and they either remain attached to the surface of the metal, and so sheathe it from further influence, or they fall to the bottom of the liquid as a fine pulverulent solid. If, however, an acid or alkali be present, the powders dissolve and form compounds which are poisonous. In this way milk, cider, vinegar, and other acid liquids are liable to acquire a toxic property.

There are two poisonous compounds of zinc which are frequently used by the public: these are the *sulphate* or white vitriol, and the *chloride* or Sir William Burnett's disinfecting liquid, both of which have occasioned dangerous consequences. They act as caustics and powerful local irritants, producing great pain in the mouth, throat, and stomach, and immediate vomiting; after which they cause extreme collapse, and finally fatal coma. These liquids are known by their astringent metallic taste, and by their giving white precipitates with the carbonated alkalies, prussiate of potash, and sulphuretted hydrogen. The metal may be extracted from the tissues by incineration, treatment with a little dilute sulphuric acid, supersaturation with potash, filtration, and finally precipitation with sulphuretted hydrogen.

The *Vegetable Poisons* act for the most part in one of two ways; they either produce irritation in the alimentary canal — characterised by pain in the abdomen, vomiting, and purging, — or they

affect the nervous system, and occasion narcotism, mental excitement, mania, loss of sensation, loss of muscular motion, convulsions, and coma. Many of the vegetable poisons cause both of these sets of symptoms. Those which act in the first-named way are called *acrids* or *irritants*; those in the second, *narcotics*; and the third have received the name of *acro-narcotics*.

Among the vegetable substances which produce great local irritation are *Gamboge*, *Capsicum*, *Euphorbium*, the *Physic nut*, *Croton oil and seeds*, *Castor seeds*, *Stavesacre seeds*, *Ranunculus*, *Savin*, *Aloes*, *Scammony*, *Jalap*, *Mustard*, *Mazereon*, *Elaterium*, *Colocynth*, *Bryony*, *Arum*, *Anemone*, *Hyssop*, and *Turpentine*. Many of these owe their activity to a resinous body: this is the case with gamboge, euphorbium, aloes, jalap, colocynth, scammony, capsicum, manchineal, and mazercon. Others, to an oil or oily principle, as croton, castor, savin, mustard, and turpentine; others, to a peculiar bitter compound, as bryony, &c.; others, to a volatile body, which is partly dissipated by drying the herb, as anemone, arum, and ranunculus; and others, to a neutral crystalline principle, as elaterium and stavesacre. The general effects of these poisons are, heat in the mouth, pain in the stomach and bowels, vomiting, purging—sometimes of bloody matters—then prostration of the vital powers, and death. The symptoms usually come on immediately, or almost immediately, after taking the poison; and the duration of the effects vary with the dose and strength of the patient, for they may extend over a period of from sixteen hours to a week. The treatment to be adopted in all these cases is the speedy use of the stomach-pump, or the administration of an emetic of sulphate of zinc, and the encouragement of vomiting by the use of warm water. When the vital powers begin to flag, mild stimulants may be resorted to; and, should the effects run on into inflammation, antiphlogistic measures must be used.

The *post-mortem appearances* in cases of this description are confined to the alimentary canal. The stomach will show signs of great irritation, the intestines will often be of a deep red colour, and bloody matters may be effused into their cavity. The medico-legal management of such cases must be confined to a search for the vegetable substance, and the examination of it under the microscope. In some instances, the action of spirit or ether on the contents of the alimentary canal will discover the presence of the acrid principle.

Under the head of narcotic poisons may be classed *Opium*, *Lactuca*, *Prussic acid*, *Cherry laurel*, the *Kernels of Fruits*, *Jatropha*, and *Camphor*. The effects which are produced by these substances are not susceptible of generalization. They must, therefore, be considered individually.

Opium. — There are several varieties of this drug — the product of different countries; but the effects of all are so nearly alike that it is not necessary to refer to them individually. When opium is administered in full medicinal doses, it usually occasions some

excitement of both the vascular and nervous systems ; and a pleasurable kind of intoxication is the result. But when it is taken in poisonous quantities, this excitement is rarely witnessed, or, if it is, it is quickly followed by giddiness and stupor. This rapidly increases ; the sensations are blunted ; the patient falls into a deep sleep ; he breathes slowly, and, at times, with stertor ; the eyes are fixed and but partially closed, having the pupils at first contracted and at last dilated ; the face becomes ghastly pale, the pulse feeble ; and, as the effects progress, the breathing gets slower and slower, the stertor more deep, and the surface of the body acquires a death-like coldness : at last, death is ushered in with the most profound coma, and, in children, with convulsions. In the early stages of the attack, it is not generally difficult to rouse the patient ; but, at a later period, this is almost impossible. Should recovery ensue from these effects, the sufferer is always listless and heavy for a considerable time afterwards : he goes off to sleep as he talks, the face looks flushed, the eyes glisten and have a ferretty appearance from the congested state of the conjunctiva, and the surface of the body is bedewed with perspiration. If not watched he may relapse into a comatose state, and even then die. These symptoms come on in a few hours after taking the poison, and they run their course in from fifteen to twenty hours.

Opium has the power of producing another class of effects, which may be regarded as the chronic action of the poison. These result from the habitual use of the drug ; and they manifest themselves whether it is chewed, drunk, or smoked. The first symptoms produced are those of pleasant excitement, whereby all the faculties are roused. This lasts for several hours, and is then followed with terrible prostration, during which the sufferer resorts to another dose, and then to another, until, at last, the whole of the functions of the body become impaired, and the victim can hardly endure the weight of his miserable existence. The appetite fails him ; all sexual desires are lost ; the skin becomes yellow, dry, and shrivelled ; the body withers away ; it bends forward as if with age ; the gait is limping and undecided ; the eye listless and deeply sunk into the orbit ; the bowels are obstinately constipated ; the tongue is furred ; the desire for food entirely gone ; and, at last, worn out by the prostration of every vital power, he sinks into a premature grave, rarely reaching the middle period of life.

The quantity of opium required to kill is liable to great variation. Four grains have killed an adult, and others have recovered after taking much larger quantities. In the case of children, however, it appears that very small doses indeed, even a drop or two of the tincture, may produce fatal results.

The treatment to be adopted in these cases is, first, to remove the poison from the stomach as quickly as possible : this is best accomplished by means of the stomach-pump, but it may also be done, if the patient can be made to swallow, by an emetic of sulphate of zinc. When the contents of the stomach are discharged,

strong coffee or infusion of tea may be given; and, lastly, it is proper to keep the patient constantly moving, in order that the vital powers may not flag, and that the poison may be eliminated from the system. If all other means fail, recourse must be had to artificial respiration, and, if practicable, to the use of a galvanic battery, the shocks of which are to be sent along the spine, and from one side of the chest to the other.

The post-mortem appearances are not very numerous or well-marked in these cases, though the body is flaccid, the countenance pale, and the stomach a little redder than natural. The lungs are congested, the heart and large veins filled with dark uncoagulated blood, the vessels of the brain highly injected, and sometimes there is effusion of serum into the lateral ventricles.

Opium and its solutions may be recognised by their bitter taste, their peculiar odour, and the chemical reactions of two of their constituents — viz., morphia and meconic acid. The former of these is a bitter crystalline solid, nearly insoluble in cold water, but soluble in 100 parts of the boiling liquid, and in about forty of alcohol. It has an alkaline reaction and combines freely with acids, forming compounds which water readily dissolves. These compounds have the power of striking a bright red colour with nitric acid, and a bluish green with sesqui-chloride of iron. Meconic acid is also a crystalline body, of rather difficult solubility. It has weak acid properties, and its solutions give a white precipitate with sugar of lead, and a deep blood-red colour with the persalts of iron. This colour is not destroyed by a saturated solution of corrosive sublimate, whereby the acid may be easily distinguished from sulpho-cyanide of potassium, one of the constituents of saliva.

When opium is contained in organic mixtures, there is some difficulty in discovering it, and, hence, many processes have been resorted to. Of all these, the method proposed by M. Lassaigue is the most easy of application. The following is a brief sketch of it: — If solid matters are to be operated on, cut them into small pieces; if liquid, evaporate them over a steam-bath to the consistence of syrup. Digest the product with alcohol and a little acetic acid, filter, precipitate with sugar of lead, and again filter; pass sulphuretted hydrogen through the filtered liquid, so as to remove any excess of lead, filter a third time, evaporate to dryness, and test with nitric acid and sesqui-chloride of iron for morphia. Secondly, take the precipitate (meconate of lead) that was formed when the sugar of lead was added, diffuse it through water, treat it with sulphuretted hydrogen, filter, evaporate, and test for meconic acid.

Prussic or *Hydrocyanic acid* is a poison which has frequently been employed for criminal purposes. It is also the active constituent of the volatile oil of bitter almonds (ratafia oil or essence), of the kernels of certain fruits (especially of all the pomaceæ), of the juice of *Jatropha manihot*, and of laurel water. The acid is not found ready formed in vegetables, but is produced by the reaction

of certain albuminous substances, having properties analogous to ferments, on a neutral principle (amygdaline) contained therein. Moisture and warmth seem to be the only conditions necessary to the reactions in question. It appears, moreover, that the bitter almond and other such poisonous kernels contain about four per cent. of amygdaline, and that every sixteen parts of this substance yield about one of prussic acid, and seven of volatile oil.

The symptoms produced by this poison are very rapid in their manifestations; for, almost immediately after swallowing it, a sense of giddiness is perceived; then follow confusion, loss of voluntary power, insensibility, tetanic convulsions, and speedy death. While these are running their course, the countenance is much disturbed, the eyes glisten, become prominent, and assume a wild expression; there is extreme dilatation of the pupil, foam issues from the mouth, the respiration is catching, or sighing and laborious, and the pulse is hardly perceptible. All this occurs in the space of a few minutes, and ere an hour has passed away there is either complete recovery or death. The quantity of poison capable of producing these effects is pretty accurately determined, for it ranges between nine-tenths of a grain and a grain and a quarter.

The treatment to be employed in these cases is, the cold douche on the face and chest, artificial respiration, and the evacuation of the stomach by means of an emetic or the stomach-pump. The post-mortem appearances are those of spasm and asphyxia — the features are usually distorted, the eyes are open and glistening, the pupils widely dilated, the fingers and toes bent, from convulsion, the dependant parts of the body livid, the venous system gorged with black fluid blood, having the odour of poison, and the lungs highly congested. The stomach also is generally empty on account of the vomiting which usually takes place, and the contents of the rectum and bladder may likewise have been discharged during a convulsive attack.

The tests for the poison are — 1st, its peculiar odour and sense of bitterness at the back of the mouth; 2ndly, it produces a white precipitate with nitrate of silver, which, when dried and heated in a small glass tube, evolves a gas (cyanogen) which burns with a bright rose-coloured flame; 3rdly, when neutralised with liquor potassæ, and treated with a solution of green vitriol, and a little sulphuric acid, it occasions a precipitate of Prussian blue; 4thly, when mixed in a glass capsule with a little hydro-sulphuret of ammonia and free sulphur, and then carefully evaporated to dryness, it produces a compound (sulpho-cyanide of ammonium) which strikes a deep red colour with the persalts of iron.

All these reactions may be made evident by holding a drop of the several tests, on a plate of glass, over the suspected liquid. In the course of a few minutes the acid, being very volatile, will rise in vapour and attach itself to the reagents. This mode of proceeding will always serve for the detection of prussic acid in organic mixtures; but, when it is necessary to determine the amount of

the poison present, it is advisable to distil the mixture from a salt-water bath, and to subject the distillate to the action of nitrate of silver; then to collect the preeipitate, dry it, and weigh it: every five grains represent one of anhydrous prussic acid. The medical practitioner ought also to be aware that any liquid may be deprived of prussic acid by means of a little slaked lime and sulphate of iron. In this way ratafia oil may be rendered inert, and by redistillation it is obtained in a state well-suited for all domestic purposes.

Camphor, the last of the narcotics to which we have referred, is not likely to be made the subject of medico-legal investigation: it acts on the brain and nervous system, producing langour, giddiness, delirium, numbness, tingling and coldness of the extremities, accelerated respiration, and a quick pulse. From thirty to forty grains have, in two cases, produced these symptoms, and they were quickly relieved by means of an emetic. The odour of camphor will always serve to distinguish it.

The *narcotico-acrids*, or *acro-narcotics*, constitute the third class of vegetable poisons; and, as their name indicates, they produce a twofold action on the system — one local and irritating, the other remote and narcotic. The most important of these poisons are derived from the following natural families: — the *Solanaceæ*, or nightshade tribe; the *Ranunculaceæ*, or crow-foot tribe; the *Apocynaceæ*, or nux-vomica tribe; the *Melanthaceæ*, or colchicum tribe; the *Umbelliferae*, or umbel-bearing tribe; and the *Urticaceæ*, or nettle tribe. In speaking of this class of poisons, Dr. Christison says, that, “for the most part, their narcotic and irritant effects appear to be incompatible: that is, when they act narcotically, the body is insensible to the local irritation; and when they irritate, the dose is not large enough to act narcotically. In large doses, therefore, they act as narcotics, in small doses as irritants. Sometimes, however, the narcotic symptoms are preceded or followed by symptoms of irritation; and more rarely both exist simultaneously.” The narcotic effects of these poisons are, in most cases, very peculiar; and, as a rule, they are much alike among the individual members of each class. For example, the *Solanaceæ* almost always cause great dilatation of the pupil, confusion of vision, hallucinations, loss of voice, delirium, often amounting to mania, and then profound coma. The *Melanthaceæ* act on the nervous system in a somewhat similar way, except that there is no delirium, and that the prostration of the vital powers is more complete. The poisonous *Umbelliferae* occasion giddiness, sometimes delirium, great loss of muscular power, insensibility, and death by coma. The *Ranunculaceæ* act by producing a tingling sensation over the whole body, followed, in some cases, by numbness, then a total destruction of the sense of feeling, paralysis, insensibility, and death; and the *Apocynaceæ* occasion the most violent spasms or convulsions of the whole muscular system. All these effects begin to manifest themselves in about three-quarters of an hour after the poison is taken,

and they run their course in less than twenty-four hours. These are produced either by an alkaloid contained in the plant, or by an acrid resin. The former may, in most cases, be extracted either by means of alcohol or a weak acid; and when the active principle is volatile, it may be procured by distilling the plant with potash. This is the case with conia, the active principle of hemlock, and nicotina, the poisonous ingredient of tobacco. All these alkaloids exist in the plant in combination with some weak vegetable acid. In this state they are soluble in water, and may therefore be easily extracted. On adding a little ammonia, potash, magnesia, or lime to the filtered liquid, the alkaloid is set free, and may then be removed either by means of ether, which floats on the surface, or chloroform, which falls to the bottom of the liquid, carrying, in each case, the alkaloid with it. Animal charcoal also possesses the power of abstracting these active principles from their aqueous solutions; consequently, when a little of this kind of carbon, in a granular state, is agitated with a liquid containing a vegetable alkaloid, it absorbs the poison and falls with it to the bottom of the vessel. On collecting the deposit, boiling it for a short time in a large quantity of alcohol, and then evaporating the filtered solution to dryness, the alkaloid is obtained in a tolerably pure state; but it may be rendered still more pure by treating it with a little potash or magnesia, then with ether, and, lastly, filtering and evaporating. Another means has been proposed for the separation of these active principles: it is founded on Lassaigne's process for the detection of morphia in organic liquids. The suspected matters are to be treated with alcohol and filtered, then precipitated with acetate of lead and again filtered. The excess of lead is to be removed from the filtered liquid by means of sulphuretted hydrogen or a little dilute sulphuric acid; the clear liquor is then to be decanted and carefully evaporated to dryness over a steam-bath. In this way the crude alkaloid is obtained; and it may be purified, if necessary, by means of a drop or two of potash, and a little ether.

The treatment to be adopted in all cases of poisoning by the acro-narcotics is the administration of an emetic of sulphate of zinc, or the use of the stomach-pump. Physiological antidotes are likewise to be resorted to; if the vital powers are depressed, stimulants are to be given, and, if they are excited, sedatives. When there is a great tendency to sleep, the patient must be kept roused, and, as a rule, coffee and green tea may be used with benefit. Taking advantage of the property which animal charcoal possesses of absorbing the active principle of these poisons, Dr. Garrod, and others, have recommended the use of carbon as an antidote.

The post-mortem appearances are generally those of great irritation in the alimentary canal, and congestion of the brain and lungs.

With these general remarks, we proceed to examine the effects of the acro-narcotics a little more in detail.

Among the poisonous *Solanaceæ* the most important are *Common Henbane*, *Thorn-apple*, and *Tobacco*, and the *Deadly* and *Woody Nightshade*. The active principles of these plants have been respectively named *hyoscyamia*, *daturia*, *atropia*, *nicotina*, and *solania*. The first three of these vegetables act on the animal body in very nearly the same manner. They cause irritation of the alimentary canal, dilatation of the pupil, confusion of sight, loss of voice, preceded by hoarseness and dryness of the throat, hallucinations, delirium, and coma. The irritating effects of these substances are not, however, equally great, for hyoscyamus exerts but a very slight power in this way; it is even doubtful whether it may not be classed among the pure narcotics. Of all these poisons belladonna or deadly nightshade is most likely to be the cause of accident. Its berries have a tempting appearance, and they have therefore been eaten by children and others who were ignorant of their nature. In the month of August, 1846, a number of persons were poisoned in London in consequence of the berries having been sold by a countryman, who was unacquainted with their dangerous properties. Hyoscyamus has also been mistaken for an edible plant, and has produced fatal results. The symptoms in these cases usually come on in from ten to twenty minutes, and death is rarely delayed beyond a single day. The effects of *tobacco* are a little different from the preceding; for they are those of general depression — there is nausea, giddiness, constant yawning, a pale countenance, a cold clammy surface, weakened circulation, relaxation of the muscular system, perhaps a little delirium, slight convulsions, and death. In some cases there is vomiting, and a painful sinking sensation at the pit of the stomach. These effects are produced whether the plant be chewed, snuffed, smoked, or given in an enema; and it appears that as little of the poison as thirty grains might endanger life. Orfila has shown that very small traces of nicotine, the active principle of tobacco, may be detected in the alimentary canal and tissues of animals poisoned by it.

The effects of *Foxglove* are very similar to those occasioned by the *solanaceæ*. It produces nausea, perhaps a little vomiting and purging, headache, a sense of dryness in the mouth and throat, sometimes salivation, giddiness, weakness of the limbs, feebleness, and increased frequency of the pulse, false vision, dimness of sight, dilated pupils, delirium, coma, and death. If foxglove is given in small and repeated doses, it is apt to accumulate in the system and suddenly to manifest its dangerous effects. In these cases it causes heat of skin, a sense of weight and throbbing in the head, a lowering of the heart's action, with great fluttering of the organ when the patient assumes the horizontal position, profuse sweating, giddiness, want of sleep, delirium, insensibility, great coldness of the body, syncope, and death. The active principle of this plant is *digitalia*.

The poisonous *Umbelliferæ* are *Conium maculatum*, or *spotted hemlock*; *Ceanothe crocata*, or *hemlock dropwort*; *Cicuta virosa*, or *water-*

hemlock; and *Æthusa cynapium*, or *fools' parsley*. The first of these is a very common plant in this country, growing in marshy districts. Its effects are those of profound coma and paralysis. At first it occasions stupor like intoxication, then insensibility, profound sleep, and coma. In rare cases it produces convulsions and delirium. Water-hemlock acts as a local irritant; it then gives rise to insensibility, with a dilated pupil, tetanic convulsions, and, finally, deep coma. This plant abounds in marshy districts, and it is known by its hollow cellular root. The other poisonous umbelliferae act in a very similar way, and they all manifest their effects in about one hour after they have been taken. The active principle of common hemlock is a volatile, oily-looking base named *coni*a, which has the peculiar smell of mice.

Belonging to the poisonous *Ranunculaceæ* are *black hellebore*, or *Christmas rose*; *Stavesacre seeds*; *Monkshood*, or *common wolfsbane*; and *Aconitum ferox*, which yields the *bish* or *bikh* poison. The first of these owes its power to an *acrid oil*; the second, to an alkaloid named *delphinia*; and the third and fourth, to a basic compound called *aconitina*. Black hellebore is a powerful local irritant. It causes a burning pain in the mouth, great sickness, and profuse purging; then follow cramps of the legs, cold sweats, syncope, insensibility, and death. The seeds of stavesacre act in a very similar way. Monkshood, and *aconitum ferox*, produce a feeling of heat in the mouth, which is soon followed by numbness of the lips and throat; they excite vomiting, cause coldness of the body, great weakness, syncope, and death without coma.

The *Apocynaceæ*, or *nux-vomica* tribe, contain the following poisonous plants:—*Nux-vomica*, *St. Ignatius' bean*, *Strychnos tieuté*, *Woorari*, *False augustura*, and the *Cerbera tanghin*. They all produce the same set of effects. These are bitterness in the mouth, nausea, quickly followed by the most terrible convulsions, during which the eyes protrude, the face becomes congested, the pulse fluttering, the breathing arrested, and the body bent violently backwards. These symptoms may intermit for a short time; but the slightest excitement is sufficient to induce another fit, and then another, until the spasm becomes so violent that the muscles of the chest are fixed, and then death takes place from suffocation.

These effects are due to the operation of two alkaloids, viz. *strychnia* and *brucia*. The former is known by its persistent bitter taste, and by its striking a beautiful violet colour, which runs into crimson and then into orange, with a drop of strong sulphuric acid, and anything that will evolve oxygen, as peroxide of manganese, red lead, or chromate of potash. The latter has the property of producing a rich carmine tint with aquafortis.

The *Melanthaceæ*, or *Colchicum* tribe, yield *Common meadow saffron*, *White hellebore*, the *Officinal asagrea*, and *Cebadilla*, all of which are powerful local irritants, causing pain in the stomach and bowels, vomiting, purging, slow and intermitting pulse, syncope,

and death. They owe their activity to one of two alkaloids — *colchicina* or *veratria*.

Upas antiar, or the poison-tree of Java, and *Indian hemp*, belong to the nettle tribe (*Urticaceæ*); both of these plants contain active principles of a resinous nature. They are not very irritating to the intestinal canal, but operate chiefly as narcotics. The *upas antiar* acts somewhat like *strychnia*: it causes convulsions, with alternations of relaxation; and, according to Sir Benjamin Brodie, it renders the heart insensible to the stimulus of the blood. *Indian hemp* produces a pleasant kind of intoxication, followed by sleep, sometimes by catalepsy, and still more rarely by delirium. In general, its effects are so agreeable and soothing, that it is known in India as the “increaser of pleasure.”

Cocculus indicus is another vegetable which has the power of producing intoxication; and there is little doubt that publicans are in the habit of using the berries of this plant in order to give a false strength to beer. Dr. Pereira states, on the authority of an excise officer, that the effects are rather on the voluntary muscles than on the intellectual powers. The active principle is a neutral substance called *picrotoxine*, which, according to Dr. Glover, acts on animals in a very singular manner. It produces retrograde movements, salivation, general tremors, bloody stools, laborious breathing, rapid action of the heart, and opisthotonos. The post-mortem appearances have always revealed signs of irritation in the stomach and intestines, together with great congestion of the brain and upper part of the spinal cord.

Lobelia inflata, or *Indian tobacco*, has, within the last ten or twelve years, produced several cases of fatal poisoning, in consequence of its having been employed in a very reckless manner by certain empirics, who have adopted the very ominous name of Coffinites. It is a powerful local irritant, producing a feeling of warmth, and then of pain, in the part to which it is applied. It causes active vomiting, sometimes purging, copious diaphoresis, great general relaxation, syncope, a few convulsions, and death.

Ergotised grain; as *spurred rye*, *wheat*, &c., has frequently been the cause of serious mischief, from its having been ground in preparing the respective kinds of flour. When taken in large quantity, it produces nausea and sometimes actual sickness; it diminishes the force of the circulation, occasions weight and pain in the head, giddiness, delirium, and stupor; in addition to which, it acts on the uterus of the impregnated female, and causes it to expel the fœtus. If the poison is taken in smaller quantities, as an article of food, it produces a condition of the system named ergotism. This is characterised by a loss of general health, a sallow complexion, a voracious appetite, coldness of the extremities, a feeling of insects creeping over the body, then insensibility, and finally either convulsions, with permanent contraction of the muscles of the extremities, or else gangrene of the limbs and death. These effects

have been frequently witnessed in times of scarcity, and have sometimes spread over a large district like an epidemic. The spurred corn is known by the great length of the grain, and by the blackness of its colour.

The *Berries of the Yew*, the leaves of *Coriaria myrtifolia*, the grain of *Darnel grass*, certain *poisonous Fungi* or *Mushrooms*, and several other vegetable substances, are likewise injurious to the animal system. They all act as local irritants, producing vomiting and purging; and then as narcotics, occasioning languor, debility, weak pulse, cold surface, vertigo, stupor, and, perhaps, insensibility and death.

The *Animal poisons* which have been best studied are cantharides, poisonous fishes, venomous serpents, insects, other articulates, and decayed or diseased animal matters.

Cantharides are rarely given for the purpose of committing murder; but they are sometimes administered with the view of exciting the generative system, but this can never be accomplished without producing other violent and dangerous effects. These are a burning pain in the throat, stomach, and bowels, excessive vomiting and purging, perhaps of bloody matters, difficult deglutition, distressing strangury, suppression of urine, and discharge of blood. There is also headache, intoxication, delirium, sometimes tetanic convulsions, or coma, and death. These symptoms occasionally intermit for several hours or even days, and then return with fatal violence. It is considered that a dose of 30 grains of the insect may produce all these results. The effects of cantharides, when applied to the surface of the body, are well known. They are heat and pain in the part, increased redness, and finally effusion of serum beneath the outer skin. Even these effects are not always free from danger, for the surface of the part may slough, or death may be occasioned by absorption of the poison. The treatment to be adopted in these cases is, the administration of warm demulcents, and, if necessary, an emetic. The after-effects are to be combated by opiates and the use of antiphlogistic measures. In cases of poisoning by this insect, the post-mortem appearances are those of great irritation of the whole alimentary canal, and of the sexual and urinary systems. The insect, even in fine powder, may be recognised by the glistening character of its surface, and by its yielding a blistering liquid when it is steeped in ether, oil, or acetic acid. The active principle is a neutral fatty body, named *cantharidine*. There are many other insects which possess the blistering and acrid properties of cantharides. This is the case with the *Meloe proscarabæus*; the *Meloe majalis* or *true mayworm*; the *Mylabris eichorii*, which is used in Italy, China, and some parts of the East Indies; the *Bombyx ptyocarpa* and *processionæa*; the *Coccinella bipunctata*; and several species of cantharis: as the *C. vittata* or *potato fly*, the *C. atrata*, *marginata*, and *cinerea*, which are used in North America; the *C. atromaria*, in Brazil; the *C. ruficeps*, in Java and Sumatra; the *C. gigas*, in Guinea and the East Indies; and

the *C. syriaca*, in Arabia. It is probable, from the investigations of Laviini, Sobrero, and others, that catharidine is the active principle of all of them.

Many Fish, and other aquatic animals, have the power of secreting a fluid which inflames the hand that touches them. This is the case with the weever, or sea-viper, and many of the jelly-like masses (*acalepha*) and star-fishes (*echinoderms*), which are found about our coasts. The nature of the poison which produces these effects is not known.

Of the 263 species of *Serpents*, as mentioned by Schlegel, 57 are venomous. The commonest of these are the *Viper*, the *Rattlesnake*, and the *Cobra di capello*. All these reptiles are furnished with a hollow or grooved and curved tooth, which becomes elevated from the palate when the animal opens its mouth. This is supplied with poison by a gland which lies under the temporal muscle, and which is squeezed out by the pressure used in the act of biting. The symptoms which it occasions are, a smarting or severe pain in the part, rapid œdema, extending from the wound to the whole limb, lines of inflammation along the course of the lymphatics; then nausea, perhaps vomiting of bilious matter, fever, delirium, and fatal collapse—characterised by a small pulse, an anxious countenance, cold extremities, quick respiration, and a death-like sensation about the region of the heart. All these effects manifest themselves in the course of a few minutes, and in less than six hours death usually closes the scene. The treatment to be adopted is of two kinds, viz., the extraction of the poison by means of the knife, suction, or the free use of any liquid caustic; it is advisable, also, to put a tight ligature around the part on the side next the body, so as to prevent the venom from entering the circulation. Secondly, the depressing influence of the poison must be combated by powerful stimulants, such as hot brandy and water and ammonia. The nature of the compound which produces these effects is not known; all that can be said of it is, that the poison, in its recent state, is a transparent, limpid, greenish-yellow fluid, which is tasteless, and has neither an acid nor alkaline reaction; but, when dried, leaves a gummy viscid mass. There is a common opinion that it may be swallowed with impunity. This is perhaps true of some of the venomous poisons, but it is not so of all of them, for Dr. Hering has recorded that small doses of the copra venom, even when largely diluted with water, produce salivation, diarrhœa, and pains throughout the whole body. The *Scorpion*, *Centipede*, *Ant*, *Spider*, *Bee*, *Wasp*, *Hornet*, and some others of the articulates, also possess the power of wounding the skin, and of exciting pain in the part. The effects are often very severe for a time, but they rarely prove fatal. It is believed that the active principle in all these cases is *formic acid*, an acid which is also secreted in the stinging-nettle, and in many poisonous insects. The best remedy for the mischief is an alkali, as ammonia, or dilute liquor potassæ, freely applied to the part.

Many *articles of Food* have at times been known to produce unpleasant consequences, and, in fact, to operate on the body as irritant or narcotic poisons. This is the case with certain *Shell-fish*, *Crustacea*, &c., with the *Milk of Animals* that have fed on poisonous plants, with the *Flesh of Game*, &c. In all these cases it is probable that the animal has made use of poisonous food, and that its flesh or secretions have thereby acquired dangerous properties. At other times, food becomes poisonous from disease or from putrefaction. *Stale Fish*, *decayed Cheese*, *old Sausages*, and *bad Meat* have frequently occasioned injury to the system. The effects which are produced in all these cases are, irritation of the alimentary canal, vomiting and purging, great prostration of the vital powers, cold clammy perspiration, and often the eruption of a rash on the whole surface of the body. The treatment is, an emetic and hot stimulants.

Rabid animals secrete a morbid saliva, which has the power of producing fatal effects. These are denominated *hydrophobia*, from the circumstance that there is generally great difficulty of deglutition and a dread of water. In order to produce this disease, the poison must enter the circulation by a wound. The time at which the first symptoms manifest themselves is uncertain, for it may be only a few days, or several months, after the receipt of the injury. At first there is a tingling sensation in the wounded part, and a feeling of numbness or coldness creeping up the limb to the body; then there is anxiety, restlessness, and irritability of temper; the senses become morbidly acute, and a strong light, a sudden sound, a breeze of air, and certain kinds of touch offend him; he has a dread of some imaginary object, looks wildly about him, the pupils being dilated and the eye glistening. There is fever, thirst, increased flow of saliva, a sense of fluttering about the heart, and soon the first symptoms of tetanic fits present themselves, by the trembling of the limbs and the convulsive starts whenever the least excitement is offered. These attacks become more and more frequent, until at last there is almost constant spasm of the whole body, and death takes place either from exhaustion or asphyxia — the intellect generally remaining clear to the last. No treatment has hitherto proved successful in this disease, when once the symptoms have made their appearance; but great good has often resulted from the timely excision of the wounded part, or the destruction of the poison by means of a powerful caustic.

There are a few other organic poisons which ought, doubtless, to claim the attention of the toxicologist, as well as that of the practical physician — these are the *poisons of Cholera*, *Plague*, *Influenza*, the *Exanthemata*, and the *various kinds of Fevers*. They have sometimes been considered under the name of *septics* or *zymotics*, from a belief that they induce a kind of putrefaction or fermentation in the fluids and solids of the body; but too little is known respecting them and their *modus operandi* to warrant more than this brief allusion to them.

Before we leave this subject it may not be unprofitable to inquire whether poisons are ever found in the human body, as natural constituents of it; and, if so, what those poisons are, and how they may be recognised.

Several chemists have asserted that *Arsenic*, *Lead*, *Copper*, and *Manganese*, are normal components of the living animal frame. We will examine the grounds on which this opinion is founded.

1. *Concerning Arsenic*.—Many years ago the investigations of M. Courbe led him to believe that this poison is at all times present in the human body. More recently, this idea was adopted by Orfila, and it is even now entertained by Legrip and many of our forensic advocates. It appears, however, from the carefully conducted researches of Flandin and Danger, Pfaff, Rees, and even those more recently made by Orfila himself, that this is an error; for all these chemists have failed to detect the presence of arsenic in the dead body, notwithstanding that their processes were most delicate. Orfila, has, therefore, recanted; and it is probable that the error was originally occasioned either by the use of materials which contained arsenic, or by the presence of some compound of sulphur, or phosphorus, which gave results that were mistaken for it. Some chemists have imagined that, as a solution of arsenious acid is frequently employed by farmers for steeping grain before it is sown, a little of the poison might be absorbed by the plant, and so gain access to our food; but this, also, is an error, for the examinations of Girardin, Herberger, and others, have proved that this mineral is never taken up by the growing plant. Very recently the investigations of Walehner, Chevalier and Gobley, Chatin, Flandin, Keller, Figuier, Tripier, and Will, have shown that arsenic is always present in ferruginous springs. It has been detected in the chalybeate waters of Germany, France, and England, but the proportion in which it exists therein is so small that it is not likely to be the source of poison in the human body. Figuier states that it requires seventy-nine gallons of the water of Wiesbaden to furnish the one-hundredth of a grain of arsenic.

2. *With respect to Lead*.—The presence of this metal in the animal body is open to doubt. Orfila, Devergie, Barse, Millon, and Legrip, affirm that it is a normal constituent of the living animal frame, while Danger, Flandin, Taylor, and Christison assert that it is not. Legrip states that he has obtained about 0.0054 of metallic lead from 1000 parts of the liver and spleen of a man who had not been exposed to the poisonous influence of this metal; and that 1000 parts of the same organs of the cow furnished 0.0032 of it. Millon also says that it is easy to demonstrate the presence of lead in human blood, by diluting it with three times its bulk of water, and then agitating it in a bottle of chlorine gas. In this way the albumen of the blood is coagulated; it becomes brown, and finally grey, leaving a clear liquid in which lead and copper may be discovered by appropriate tests. Gorup Besanez has likewise imagined that he had detected lead in the bile

of the ox. It is probable, therefore, that this metal may be a common, if not a natural, constituent of the living body.

3. *With regard to Copper.*—Chevreul, Danger, Flandin, and Taylor, are of opinion that this poison is not naturally found in the animal system; but Orfila, Devergie, Henry, Barse, Sarzeau, Rossignon, Boutigny, Legrip, Bertozzi, Heller, Braunson, Besanez, Millon, Desehamps, Harless, and perhaps Christison, assert that it is. Orfila says that he has frequently met with it in the human body. In the month of September, 1843, M. Rossignon addressed a note to the French Academy, stating that he had recognised copper in the blood, muscles, and certain secretions of man and animals. Bertozzi has found it in large quantity in coloured biliary calculi; and Heller, Braunson, and Gorup Besanez, have confirmed his results. Millon has detected it in human blood, Barse in the bodies of persons who have died of ordinary disease, and Harless and Von Bibra have found it in the blood of Ascidia and Cephalopoda generally. Legrip states that 500 parts of the liver and spleen of man will yield about 0.0045 of metallic copper, and that 1000 parts of the same organs of the cow furnish 0.0082 of it. Many articles of food contain copper, and this is, without doubt, the source of the poison; for the inquiries of Heller and Devergie have shown that the proportion of the metal increases with the age of the animal. Many chemists have demonstrated that wheat grown in soil containing copper, or produced from grain which has been steeped in a solution of the metal, always contains this poison. Dumas has made especial reference to this fact, and Orfila has even calculated the amount of copper which annually finds its way into the bodies of Frenchmen from this source: he says that it amounts to no less a quantity than 8042 pounds avoirdupois. Rossignon declares that he has detected this poison in sorrel, bread, sugar, coffee, chicory, chocolate, and even the soups of Paris. It is also commonly present in pickles and green preserved fruits. So that we can perceive many means whereby copper is likely to gain access to the body, and become a constituent part of its tissues.

It is generally thought that when copper and lead have thus entered the body, and combined with the tissues, that the metals cannot be dissolved out by ordinary solvents; whereas all the metal which is not so introduced, but is administered as poison, may. Hence, they have proposed a means of distinguishing the normal metal from the poisonous: this is accomplished by boiling the tissues with water slightly acidulated with acetic acid.

4. *Manganese* has also been discovered in both plants and animals. Millon says it exists in rather large proportion in human blood; and Drs. Gundlach and Strecker have met with it in the bile of the pig. It is also a common constituent of many vegetables. This metal is not, however, ranked among poisons, and is therefore not likely to be a source of embarrassment.

SUSPENDED ANIMATION.

If we give to the term suspended animation all the significance of which it is capable, we shall find that it includes all those conditions in which motion, sensation, and consciousness are arrested, and in which the evidences of vitality no longer exist; as for example, fainting, stunning, certain fits, &c. To consider the subject under such various aspects would involve a repetition of much that will be found in other parts of this work. We therefore propose to restrict ourselves to that condition in which suspended animation is produced by cutting off the supply or altering the constituents of atmospheric air, and thus changing the state of the blood,—a condition to which the term "*Asphyxia*" is specially applicable, and under which heading the symptoms we are about to describe are usually found in recent works. We propose, further, briefly to describe under the head of suspended animation some of the phenomena observed during the artificial production of insensibility to pain, which has, within the last few years, been employed in the performance of important surgical operations.

It is now fully admitted, that one of the principal purposes of respiration is to act upon the venous blood, and change it into the fluid or arterial blood, and thus fit it for re-circulation through all parts of the body. We find that the interruption of this important process is speedily followed by a suspension of all the powers of sensation and voluntary motion, undistinguishable from death; and, if continued, death itself is the result: and in the former case, it is only during a short period that the use of proper means is ever successful in restoring life.

We may now consider some of the chief causes of interrupted respiration. 1st, Any change in the constituents of atmospheric air, unfitting it for arterializing the blood—thus anything that deprives it of its oxygen—produces this effect; and also the contamination of the air with a poisonous gas, as carbonic oxide or carbonic acid. Familiar instances of this arise from burning charcoal in a small room, thus replacing much of the oxygen of atmospheric air by carbonic oxide and carbonic acid gases; also from explosions in mines, where more fatal effects are often produced by the carbonic acid or "choke damp," as it is called, than by the original explosion. 2ndly, Any cause that operates by preventing the air from entering the lungs. Under this head may be placed, submersion or drowning; and strangulation, from compression of the breathing apparatus, as in hanging, or from the introduction of any substance which blocks up the windpipe in some part of its course. To these two conditions the terms strangulation and suffocation are in popular language usually respectively applied. 3rdly, A suspension of the power and action of the mechanical apparatus by which respiration is carried on, termed "the muscles of respiration." This may result from injury to the nerves supplying these muscles, as

in fractured spine high up, in the upper part of the neck, or from such a diseased condition of the chest as mechanically impedes respiration; or, from that violent spasmodic action of muscles observed in certain cases of poisoning, whereby the muscles become so rigidly fixed that respiration is entirely prevented. Such cases are witnessed in poisoning by *nux vomica* and its active principle, *strychnia*.

We may now consider some of the leading phenomena that precede and attend asphyxia. This can only be arrived at by observing those cases in which this condition is slowly induced. The first perceptible effect is an instinctive craving for atmospheric air, and a feeling of distress, referred to the thoracic region, accompanied by a strong effort of the respiratory muscles. This sensation increases, so as to produce extreme distress and suffering, and is speedily followed by torpor and loss of consciousness; still the struggle is maintained, and irregular convulsive actions of the body take place. During this time there is abundant evidence of extreme venous congestion; this is speedily followed by complete suspended animation. The post-mortem appearances show great accumulation in the right side of the heart, and the large vessels leading to and from it. The lungs are also highly congested with venous blood; the veins of the brain and its membranes, particularly the sinuses, are distended with black blood.

We may next briefly enquire into the theories which have been advanced to explain these effects. It was formerly supposed that the heart ceased to beat in consequence of mechanical obstruction to the circulation of blood through its cavities. It has also been thought that it was rather from losing the stimulus of arterial blood. But both these views seem incorrect, and various experiments appear to prove that the primary, and indeed the chief, effects are produced by the poisonous influence of this unaltered and carbonized blood upon the brain and nervous system, which acts secondarily upon the lungs, the heart, and the rest of the muscular system, and deprives them of the power of performing their proper functions, and thus induces all the phenomena of suspended animation. It may with truth be said, that the patient under these circumstances is *poisoned by his own blood*. The symptoms that accompany asphyxia are found to vary somewhat, in accordance with the causes producing it: thus, in breathing deleterious gases,—as for example concentrated or pure carbonic acid gas,—the opening of the glottis becomes spasmodically closed, and prevents its entrance into the lungs. Instances are related, in which exposure to the full influence of this gas has produced almost instant death; when the gas is diluted with atmospheric air, the effects are not so sudden, but there is time to record the sensations; these are chiefly pains in the head, giddiness, and a feeling of languor and debility. In many respects the symptoms resemble those produced by a strong narcotic or by apoplexy. There seems to be less power of resisting the noxious influence in youth than in more mature age.

The symptoms from drowning are thus graphically described by

Dr. Goodwin: "When an individual is submersed, his pulse becomes weak and frequent: he feels anxiety about his chest, and struggles to relieve it: in these struggles he rises towards the surface of the water, and draws in both air and water: he again sinks and his pulse becomes weaker; his struggles become more violent: he again rises, throws out air from his lungs, and endeavours once more to inspire, and thus often swallows large quantities of water; his skin then becomes blue, his pulse ceases, his sphincters are relaxed, and he sinks down, without sensation or motion." It would seem that very little fluid enters the lungs during immersion. It is difficult to determine at what period of time submersion becomes fatal. If *five minutes* only have elapsed, resuscitation may be expected; after fifteen minutes it is very doubtful; and after twenty or thirty minutes nearly hopeless. The longest period on record after which reanimation occurred, was three quarters of an hour.

The third group of causes include those in which all air is prevented from entering the lungs by suffocation or strangulation, of which a familiar instance is to be found in the case of *hanging*. The period during which life is prolonged during this process is found to differ considerably, in proportion to the nicety with which the rope has been adjusted, the weight of the body, the extent of the drop, and other circumstances regulating the general efficiency of the operation. Some convulsive efforts are usually observed, somewhat of an epileptic character, and probably independent of sensation and volition. There is also extreme congestion about the face, eyes, and upper part of the body, and considerable distortion of features. Priapism is also a curious and very constant result. It has been thought by some, that in this mode of death the pressure upon the veins has caused apoplexy: but the evidence derived from cases that have been examined is against this supposition; and there seems satisfactory proof that death, in such cases, results from closure of the air passages. The appearances after death are very similar to those found in other cases of asphyxia,—the only peculiarity being the very large quantity of air found in the lungs, a circumstance readily accounted for, by the fact, that a deep inspiration is involuntarily made, previous to the stoppage of the air passages which prevents its subsequent escape.

We have now briefly to consider the best method of proceeding in a case of suspended animation. And in the first place it is desirable to keep two objects constantly in view; the primary of these is, the application of atmospheric air to the blood contained in the lungs,—the other is, re-establishment of the heart's action, and the circulation through the gorged vessels. The first of these objects is to be carried out by artificial inflation of the lungs; the second, by stimulating the nerves generally, and especially those that supply the heart, and this is best accomplished by friction, warmth, and electricity. The following course of procedure is recommended by the best authorities:—the body must be stripped and placed in a warm

blanket; the room must be well ventilated, and all persons not absolutely required, must be excluded; warmth must be applied as generally as possible to the surface, either by hot-bottles or a hot bath,—but it seems desirable not to raise the temperature too suddenly, but to apply heat very gradually; friction must also be continually kept up over the surface of the body. Simultaneously with these efforts we must strive to keep up artificial respiration; there are various modes of accomplishing this process, the most simple of these, is to imitate the natural movements, by simultaneously compressing the chest and abdomen, so as to expel the carbonized air, and trust to the natural elasticity of the parts for the fresh inflation of the lungs. This plan though somewhat imperfect, may be employed with advantage, until more efficacious means can be obtained, the object being to force pure air into the minute cells of the lungs. It is necessary that considerable quantities should be introduced, and for this purpose some force is required, and an apparatus should be used for pumping in air; it is thought that a hundred cubic inches may be forced into the lungs at each inspiration with advantage, this must be carefully abstracted before a fresh supply is sent in,—the frequency being regulated by the normal rate of respiration. When no apparatus is at hand, it has been suggested to inflate from the mouth of another individual; this plan has the serious objection, that the air thus introduced has already performed its function in the lungs, and is charged with carbonic acid. All the apparatus that is absolutely required, is an ordinary pair of bellows; the tube may be applied to one nostril,—the other, together with the mouth, must be kept closed. The larynx at the same time must be pressed back, so as to prevent air from passing down the œsophagus, and in this way the air must pass into the lungs. Various complicated apparatus have been recommended for this purpose, but they possess but few advantages over the simple bellows, and require experience on the part of those employing them. It has been suggested, that pure oxygen would be more efficacious than atmospheric air, and this is very probable, but is not supported by experiment, and is not likely to be available at such an emergency. Various stimuli have been advised, such as the vapour of ammonia, to the nostrils, with a view of stimulating the respiratory muscles; it has also been recommended to inject stimulating fluids into the stomach. The most powerful and efficacious stimulus is galvanism, applied by passing slight shocks through the diaphragm and heart. It would appear that this agent has been employed in some cases with success, when other means have failed; these various means should be persevered in for five or six hours. Some care and watchfulness is necessary after resuscitation, as instances are related in which fatal symptoms have suddenly shown themselves after the patient was believed to be out of danger; in such a case a repetition of the means previously employed will be found most advantageous. The return of consciousness is usually attended with very considerable suffering, of which the patient often vehemently complains.

Anæsthesia from the use of Chloroform or Æther. — We now pass on to that part of our subject which refers to the artificial production of insensibility to pain, or anæsthesia. And although the definition we have given of “suspended animation” is not quite in unison with the train of symptoms induced by æther or chloroform, still we think the importance of the subject, and the great professional and public interest it has excited, justifies some degree of laxity in this respect.

In the year 1846 a report reached us across the Atlantic that a means had been discovered for inducing insensibility to pain, and that by inhaling the vapour of æther this condition could be produced. The suggestion was speedily tested in our metropolitan hospitals. It was found, in the majority of instances, that a patient might be rendered insensible to pain even during severe and protracted operations; but the length of time occupied by the inhalation, the great excitement often induced, closely resembling intoxication, the violent muscular movements, the unpleasant odour both to patient and medical attendant, the severe bronchial irritation, and the complicated machine necessary for its employment, offered many legitimate, and, as some thought, insuperable objections to its use.

In November, 1847, Dr. Simpson of Edinburgh discovered, after repeated experiments, a liquid termed chloroform, the vapour of which was found to produce insensibility far more rapidly, certainly, and completely than æther, and without the unpleasant concomitants that rendered this latter so inconvenient. The result has been that æther has almost fallen into disuse, and chloroform is commonly employed where anæsthesia is desired. We may now briefly consider the best mode of administering it, the symptoms usually observed, and the risks and advantages attending its administration, and the cases in which it is advisable.

It is very desirable that the individual who gives the chloroform should have some experience of its effects, and that his attention should be concentrated upon this object during the whole time. He should be most careful to provide himself with *pure* chloroform, much mischief having resulted from neglect of this circumstance. He may employ either some simple apparatus, whereby he can regulate the admission of air, or a thin light pocket-handkerchief answers the purpose very well. The dose depends upon the age and strength of the patient, and upon the effect produced. In children, a few drops only may be employed at first; in an adult, about a drachm, and repeated according to circumstances. It is impossible to lay down any rule on this head.

The first few inhalations usually produce an uncomfortable choking sensation, some coughing, and a feeling of heat and irritation in the chest. In some cases the face becomes flushed, and there are convulsive movements of the limbs. This stage of excitement, when it occurs, usually passes off after a few minutes. The next condition is that of complete insensibility. The breathing

may be natural or slightly stertorous, the lips puffing out as in compression. This shows that the full effect of this agent has been produced. The pulse diminishes in force and frequency; the surface of the body becomes colder; the lips pale and sometimes livid; the eye usually rolls upwards. The conjunctiva is one of the last structures that loses sensation, and may be used conveniently as a test of complete coma. If inhalation be still persevered in, a dangerous train of symptoms supervenes: the pulse becomes weaker and the respiration slower; the face becomes either livid or ghastly pale; the heart then ceases to beat, and a fatal result threatens.

Dr. Snow divides the effects of chloroform into five stages: 1st. Exhilaration or mental excitement, without loss of consciousness or volition. 2dly. A semi-conscious dreamy state, with or without spasm and irregular movements of the body. 3dly. Consciousness quite suspended, with involuntary movements from external impressions. 4thly. Absence of all movement except respiration, which may or may not be stertorous. Pulse regular. Complete relaxation of voluntary muscles. 5thly. The state of complete coma. Breathing irregular and slow. Pulsation of the heart ceases. Death speedily follows.

A very common symptom of chloroform, if administered with a full stomach, is vomiting.

In some rare cases certain unusual symptoms are observed. The stage of excitement may be followed by violent convulsions, resembling epilepsy; or the heart may very rapidly and unexpectedly flutter, and almost cease to beat, or the anæsthetic condition may be prolonged for many hours or even days; or again, after return of consciousness, symptoms of coma may again suddenly come on in a complete and even alarming manner. Some of the after symptoms are sometimes distressing and protracted. There may be severe headache, sickness, and confusion of thought; and it has been asserted that mania has followed the exhibition of this vapour. There are certain morbid conditions in which chloroform is inadmissible, or at least dangerous. This is the case when either the heart or the brain are diseased. When the pulse is weak, and irregular, and fatty, degeneration is suspected. Hysteria and epilepsy are unfavourable tendencies for the exhibition of this agent.

It is important that the stomach should be empty; also that the vapour should be diluted with atmospheric air. It is likewise necessary to watch the condition of the pulse and the breathing; and, as the one becomes weak or the other stertorous, to discontinue its administration. The recumbent posture is the safest and most convenient. The local application of chloroform produces insensibility of the part on which it is placed.

We may now consider, in the last place, the risks and advantages attending its administration, and the cases in which it seems to be admissible.

Chloroform has shared the fate of most new discoveries of importance, in raising up a host both of partizans and of enemies; and it has probably suffered more from the indiscriminate advocacy of the former than the unreasonable attacks of the latter. Used with judgment and skill, and in suitable cases, it becomes one of the greatest discoveries of modern times, by preventing severe physical suffering. In the hands of the ignorant or the vicious, it becomes a formidable agent, and may destroy life and endanger property. The evil is possible and occasional, the advantage certain and frequent, and the objections to its use such as may with equal justice be urged against many of our best and most powerful medicinal agents. In all severe operations, unless there exist any of the objections we have alluded to, we think that the employment of chloroform is not only justifiable but most desirable; not only because it spares the patient all suffering at the time, but also much of the previous dread and the subsequent constitutional irritation, and enables the surgeon to pursue his operation more calmly and efficiently than would be possible amid screams and struggles. Chloroform is also of great value in important dislocations, not only because the replacement of the bone is effected without pain, but also because the chief opposing force, viz. the voluntary resistance of the muscles, is thereby removed; so that far less force is required in reducing the displaced bone into its socket. In the minor operations of surgery, such as extracting teeth, opening abscesses, &c., it is unnecessary, and therefore undesirable to give chloroform, except where extreme timidity exists, and there is a necessity for their performance.

It is still a question amongst the highest authorities as to the propriety of administering chloroform in midwifery. Various ingenious arguments have been used on both sides. Extensive and prolonged experience can alone settle this point satisfactorily; and it would be premature to offer any decided opinion on this point at present, though we may mention that the feeling of a large majority of medical practitioners in this country is decidedly adverse to the employment of chloroform during parturition.

If the dangerous train of symptoms we have mentioned should show themselves, the clothes covering the chest must be undone; cold air must be freely admitted; cold water must be dashed over the face and chest. Ammonia may be employed. Artificial respiration may be kept up. Galvanism and transfusion of some stimulating fluid may be tried. It is important not to give fluid by the mouth, as the power of swallowing is lost, and it may pass into the trachea; and, moreover, stimulating fluids are highly objectionable, and increase rather than diminish the effect of the chloroform.

No rule can be given with regard to the dose in which this agent is to be administered: as small a quantity as half a drachm has, in one case, proved fatal; and above two ounces have been given gradually in other cases without any unfavourable consequences. Our only guide is the effect produced in each case. It is well to

commence with about twenty drops, and gradually give more as it seems to be required.

Such are the more important points connected with the use of chloroform. It cannot be denied, that its administration, even under the most favourable circumstances, is attended with some slight degree of risk and danger. This consideration, while it suggests great caution in regard to the purity of the chloroform, the experience of the administrator, and the suitableness of the case, should not deter us from availing ourselves of its power, wherever the severity or duration of the suffering seem to justify its employment.

GELATUS. FROST-BITE.

The application of cold to the surface of the body has a tendency to diminish vital power, and to produce in its milder forms an inflammatory condition to which the familiar term of chilblain is applied (see the article *Pernio* or *Chilblain*); and in its severer effects, a gangrenous state, to which the term of frost-bite is applied. The degree in which a part is affected by cold depends chiefly upon three circumstances:—1st. The intensity of the cold; 2dly. The time during which it is applied; 3dly. The remoteness of the part from the centre of the circulation. In frigid regions, complete and rapid loss of vitality often occurs, or more frequently mortification is secondary, and results from a violent reaction of an inflammatory character, which the enfeebled part cannot sustain, and which speedily passes into gangrene. The parts most liable to be affected are those most exposed, and in which the circulation is the feeblest; those, therefore, that are remotest from the heart, as, for example, the toes and fingers, or the nose and ears. The first obvious local effect of cold is, by diminishing arterial supply and retarding venous circulation, to produce a deep bluish red discolouration: if the cold be still continued in an intense degree, viz. from 5 to 10 degrees below freezing point, the venous blood will be expressed by contraction of the vessels, and a livid tallowy paleness of the part will be observed; there will be likewise loss of sensation and motion. These various symptoms indicate a suspension of animation in the part to which the term “frost-bite” is applied. These severer effects of cold are rarely, if ever, seen in this country; but in the more northern latitudes they are not very uncommon. The chief point to attend to in treatment is, to restrain any violent reaction, and to raise the temperature of the part very gradually. The patient must be kept in a cool place. Snow must be gently rubbed on the part; then cold water with increased friction: and thus, if the vitality is not quite destroyed, the part may be gradually restored to a healthy state. If sloughing has taken place, it must be allowed to separate, and in all respects must be treated upon ordinary principles.

DISEASES OF THE PREGNANT STATE.

PUERPERAL CONVULSIONS. ECLAMPSIA
PARTURIENTIIUM.

PUERPERAL convulsions may occur either during pregnancy or labour, and even a few days after delivery.

There is no disease which creates more alarm by the suddenness of its attack, and by the frightful appearance which it presents.

The average frequency of convulsions in puerperal women appears to be about 1 in 500 cases. Dr. Merriman met with 5 in 2947, and Madame Lachapelle with 67 in 38,000 cases.

Young, strong, and plethoric women are most liable to be attacked.

Puerperal convulsions seldom happen before the sixth month, but may occur at any time between this period and the completion of labour. They may arise at the first symptoms of labour, or after the labour is finished. They have been observed much oftener during the first pregnancy (in the proportion of 29 out of 30 cases) than in any subsequent one, particularly when the woman is unmarried. Cases, however, will occur occasionally in the ninth, eleventh, or even *fourteenth* pregnancy. In the last case, however, there was great distension of the uterus from the presence of twins.

Although convulsions may appear without the slightest warning, it will generally be found that previously the patient has complained of severe lancinating headache or a feeling of heavy weight on the head, the face is flushed, and there is indistinctness of vision or even total loss of sight, and if these symptoms are not immediately relieved the seizure takes place.

During an attack of Eclampsia the eyes are prominent, sometimes fixed, sometimes rolling with dilated pupils; the tongue is protruded with foaming at the mouth, the respiration is loud, hissing, and laborious, and the whole body strongly agitated. There is a perfect abolition of consciousness. After a time the paroxysm subsides, leaving the patient in a comatose state, which may pass into apoplexy, or from which she may awake suddenly, but wholly ignorant of all that has occurred. Several of these fits may appear in rapid succession, and it is always an unfavourable sign when the patient continues insensible in the intervals.

These fits bear some likeness to epileptic fits, and it is only by being aware of the different degree of violence attending each,

that at first sight we can distinguish them. No force can restrain a woman when in these convulsions, and, instead of endeavouring to do so, the attendants should *guide* the involuntary movements, so as to prevent the patient from injuring herself.

The fit may last a few seconds, or half an hour or more, and, when there is a succession of them, the os uteri will dilate, although the patient appears to have no labour pains; and ultimately the child will be expelled. In some instances the patient will remain insensible for hours after the birth of the child, and on the return of consciousness will hardly credit the fact of her delivery.

Two-thirds of the children are still-born.

Dr. Denman, although he afterwards found reason to modify his opinion, believed for many years that convulsions occurred only in head-presentations: it was therefore supposed that the irritation caused by the pressure of the child's head on an excitable os uteri was the chief cause of Eclampsia. This, however, cannot always be the efficient cause, as we not unfrequently find patients seized after the os uteri has become fully dilated and all the soft parts relaxed. An abnormal distension of the uterus from twins, or a large accumulation of the liquor amnii; a stomach overloaded with indigestible food, such as shell-fish; an impure atmosphere, or a heated room; tight-lacing; sudden emotions, either of joy or grief; all these have been enumerated as causes of this disease. That depression of spirits has some effect in its production is proved by the great numerical preponderance of these cases in unmarried and deserted females.

Treatment.—If Eclampsia is treated promptly and decidedly without loss of time, there is no disease of equal severity in which the result is so satisfactory both to the practitioner and the friends. A very large majority of the patients recover.

When fortunately the preliminary symptoms—such as intense headache, twitching of the facial muscles, a slow hard pulse with dimness of vision—are present, we must immediately bleed from the arm until a decided impression is produced on the system, or the symptoms are alleviated. The attack will probably be wholly averted. When these precautionary means have not been adopted, and puerperal convulsions have ensued, we are, on being called in, to open a vein immediately, or the temporal artery, and to draw off blood in a considerable quantity. A cork should be inserted between the teeth to prevent injury to the tongue. The hair must be removed, and the head covered with a bladder filled with ice. The bowels should be acted on, as quickly as possible, by throwing up a turpentine enema. From five to ten grains of calomel should be placed on the tongue, with a drop or two of croton oil, and followed, as soon as the patient is capable of swallowing, by a draught of salts and senna, which may be repeated every three or four hours, until the bowels have been thoroughly relieved. The bladder is also to be emptied by the catheter, if necessary.

The bleeding may be repeated a second or third time, according to the effect produced on the strength of the patient, or the cupping glasses may be substituted. Gradually under this active treatment the fits will wholly cease, or appear at longer intervals and in a less severe form.

In all cases we should uniformly exert our best endeavours to deliver the woman as expeditiously as possible, where it is practicable without violence or injudicious interference. When we find that the os uteri begins to relax and open, and which may take place without evident labour pains, we must introduce the hand slowly, then break the membranes, and deliver the child; or, if the uterus is fully dilated and the head sufficiently low, deliver with the forceps.

A great difference of opinion has existed about the employment of opium in this disease; and there is no doubt that its use is quite inadmissible in the early part of the treatment; but when depletion has been carried to its fullest extent without remission of the fits, and day by day the woman is gradually sinking, a full dose of opium has frequently suspended the fits, as if by magic, procured a sound and quiet sleep, and saved the life of the sufferer.

During convalescence all causes of excitement must be avoided, and the diet strictly regulated. When convulsions have once occurred the patient should be strictly watched in all her subsequent pregnancies, particularly after the seventh month; and if any symptoms of determination of blood to the head should appear, she should be immediately bled.

Hysterical convulsions are not uncommon, either before, during, or after delivery, but are always easily distinguished from real Eclampsia by the different expression of the face, by the absence of stertor or coma, by the globus hystericus, the immense quantity of flatus, and by the rapid pulse: in these cases it would be wrong to bleed, or hasten delivery: the dashing of cold water on the face and the administration of the usual antispasmodic remedies will comprise all that is necessary to be done.

ABORTIONS AND FLOODINGS.

By abortion is to be understood the expulsion of the contents of the gravid uterus at a period of gestation so early as to render it impossible for the foetus to live. It is an accident or disease of frequent occurrence, which is always attended with disagreeable circumstances; and which, although it seldom proves immediately fatal, may still be productive of much mischief at a future period.

Abortions may happen at any period of pregnancy, but they take place most frequently about the third or fourth month.

From the end of the third month to the period of quickening there is a greater susceptibility in the uterus to have its action interrupted than either before or afterwards, which is the reason of

more miscarriages happening at that time than at any other, and points out the necessity of redoubling our vigilance in watching and guarding against the operation of any of the causes, from the tenth to the sixteenth week, that may be likely to excite abortion.

When a woman happens to part with her burden before the seventh month, she is said to have miscarried or aborted; but when delivered of it after this time, the term labour is usually applied.

Children born at the end of the seventh month are seldom reared; and when they are, they usually prove small and weakly; but those of eight months are frequently preserved by bestowing proper care on them.

The substances called moles have their origin in no *imperfect conception*, as was formerly imagined, but are merely the results of disease of the placenta, of the foetus and its involucre. They at length become detached and are expelled as foreign bodies, giving rise to a considerable degree of hæmorrhage.

As some women menstruate during the first months of pregnancy, it will be necessary to distinguish between an approaching miscarriage and a visitation of the menses, which may readily be done by inquiring whether or not the hæmorrhage has proceeded from any evident cause, and whether it flows gently or is accompanied with unusual pains. The former generally arises from some fright, surprise, or accident, and does not flow gently and regularly, but bursts out of a sudden, and again stops all at once, and is also attended with severe pains in the back and bottom of the belly; whereas the latter is marked with no such occurrences.

Voluptuous women who are of a plethoric habit, as well as those who are of a weak and irritable frame, are most apt to miscarry; but accidents of this nature sometimes occur from a general defective constitution, or from a malformation of the sexual organs.

The causes which give rise to floodings during a state of pregnancy are, violent exertions of strength, lifting some heavy weight, severe exercise, as dancing or much walking, the fatiguing dissipations of fashionable life, sudden surprises and frights, violent fits of passion, great uneasiness of mind, uncommon longings, overfulness of blood, partial spasmodic action about the os uteri, aloëtic purges, profuse evacuations, excessive venery, former miscarriage, weakness in the parts immediately concerned, a diseased state of the uterus, the death of the child, general debility of the system, external injuries, as blows and bruises, strong aërid medicines, such as savin and hellebore, which are often taken for the express purpose of exciting abortion.

A pregnant woman may be attacked with a flow of blood from the womb in consequence of any cause which is capable of separating a part of the ovum from the corresponding part of the uterus. The vessels which before passed straight from its internal surface into the membranes or placenta, and connected them together, now open, so as to allow the blood to escape between

them, and to flow externally. This separation and consequent rupture may arise from any of the various causes just recited, but in a few instances it is occasioned by an implantation of a part of the placenta immediately over the os uteri, which cause is by far the most important, because it is the most dangerous, and the least likely to find a spontaneous remedy.

Abortions are sometimes induced by what is termed a retroversion of the uterus, in which the fundus uteri is retroverted and pressed down between the rectum and the vagina. This rarely occurs, however, beyond the first or second month of gestation, and is generally preceded by a difficulty in making water, and a consequent tumour of the bladder; a violent pain about the perinæum is thus caused, and a miscarriage is liable to follow.

Abortions are often preceded by a general sense of coldness, flaccidity of the breasts, slight pains in the loins and lower region of the belly, and sometimes with a slight febrile state of the system. In plethoric habits, and where abortion proceeds from over-action or hæmorrhagic action of the uterine vessels, the fever is idiopathic, and precedes the hæmorrhage. After a short continuance of these symptoms, a slight discharge of blood ensues, coming away sometimes in clots, and at others gushing out in a florid stream, then stopping perhaps for a short time, and again returning violently.

Sometimes nothing but coagulum can be perceived, that is so firm, and the globules and lymph so disposed, as to make it assume, more especially if it has been retained for any time about the uterus or vagina, a streaked or fibrous appearance, which often gives rise to a supposition that it is an organised substance. When the contents of the uterus are expelled, a bloody discharge continues for a few hours, and is then succeeded by a serous fluid.

When the pregnancy is advanced beyond the third month, and abortion is likely to ensue, we have much bearing down, together with a derangement of the stomach, causing sickness and faintness, and we have likewise a most rapid discharge, owing to the increased size of the vessels. In this stage the membranes often give way, and the fœtus escapes with the liquor amnii, whilst the rest of the ovum is retained for some hours, or even days, when it is at length expelled with coagulated blood. In some instances the whole ovum comes away entire. After the expulsion the hæmorrhage ceases, and is succeeded by a discharge somewhat resembling the lochia.

With regard to the symptoms and duration of abortion, there is a great diversity in different instances. In some cases the pains are very severe and long-continued; in others, short and trifling. Sometimes the hæmorrhage is profuse and alarming; at other times, although circumstances may not be apparently very different, it is moderate or inconsiderable. Often the sympathetic effects of the stomach and bowels are scarcely productive of inconvenience;

whilst in the greater number of instances they are very prominent symptoms. As there is a diversity in the symptoms, so there is also in the duration of abortion; for, whilst a few hours in many, and not above three days in the majority of cases, are sufficient to complete the process, we meet with other instances in which it is threatened for a long time, and possibly some weeks elapse before the expulsion takes place.

Floodings are more or less dangerous, according to the stage of pregnancy in which they happen. The farther a woman is advanced therein, the greater will be the risk, especially if unaccompanied by labour pains, as the mouths of the vessels which pour out the blood are much enlarged during the last stage of pregnancy, and of course a vast quantity will be discharged in a short space of time. Although miscarriages before the fifth month are seldom attended with immediate danger, the loss of blood being usually small, they nevertheless frequently lay the foundation of many grievous ailments, such as irregular menstruation, organic lesions of the uterus, irritable uterus, hysteria, and a cachectic habit of body, by happening repeatedly. Some women are visited by habitual miscarriages, and observe a stated period for several successive pregnancies, which is more usually about the third month than at any other time.

The danger of abortion is to be estimated by considering the previous state of health and habit of the patient, and by attending to the violence of the discharge of blood, the duration of the complaint, the difficulty of checking it, the disposition to expulsion which accompanies it, the period of gestation at which it is threatened, the frequency of its occurrence, and its combination with spasmodic affections or convulsions. The most dangerous abortions are those which are procured by substances of an irritating nature taken internally, and by attempts to excite the uterus, or puncturing the membranes per vaginam.

Previous to my pointing out the best means for checking an abortion, and the method of conducting the woman through it, when it cannot be avoided, it appears proper to notice those steps which should be taken for preventing miscarriages in those to whom they are rather habitual. In all such cases it will be highly necessary to attend to the history of such former accidents, to the usual habits and constitution of the woman, and to her condition when she becomes pregnant.

A woman that is subject to habitual abortions, and who is of a full, plethoric habit, ought to be bled just before the usual time of her misarrying. She should likewise keep her body perfectly open with gentle aperient medicines; use a spare diet, consisting principally of vegetables, and avoid all agitations of the mind, severe exercise, violent efforts, and such objects as may be likely to make a disagreeable impression on her. The sleep should be abridged in quantity, and not be taken on a bed of down, but on a firm mattress, thereby preventing the accumulation of too much

heat about the body. Every day she ought to take regular and moderate exercise, being cautious at the same time not to carry it to the length of exciting fatigue.

To bridle the circulation in women of a full, plethoric habit, that are subject to habitual abortions, in addition to drawing off a little blood from the arm when the pulse is full or inclined to throb, it would appear advisable to give half a grain of digitalis twice or thrice a-day, continuing this medicine until after the usual period of the woman's miscarriage.

In women of a weak, lax habit, bleeding would be highly improper as a mean of preventing habitual abortion. For such, a nutritive and generous diet, moderate exercise in a carriage, cold bathing, and a course of chalybeates, with other tonics, will be necessary, the patient at the same time avoiding all exciting causes. Until gestation be far advanced, it would even be advisable to live *absque marito*. Indeed, in every instance of habitual abortion, whatever the condition may be that gives rise to it, it will be essential that the greatest attention be paid to the avoiding the exciting causes. In some cases it may even be necessary to confine the patient to her room, which should be large and airy, until the period at which she usually aborts is past, and to keep her in a recumbent posture.

In those cases of habitual abortions accompanied with spasmodic pains in the uterus, or a disposition to convulsions, opium given in small doses twice a-day might prove eminently serviceable.

Where nausea or vomiting prevails in a high degree, in addition to the means before pointed out, we may employ either an opium plaster or a blister to the region of the stomach.

Attention to the state of the bowels is very necessary, and where they are confined, a little soluble tartar, crystals of tartar mixed with confectio sennæ, or a small dose of castor oil, will be appropriate laxatives. On the contrary, should diarrhœa be present, it must be checked by astringents and opium.

An abortion being threatened in consequence of some slight separation of the placenta from the uterus, may frequently be stopped by immediately adopting proper steps, and the woman be enabled to go out her full time.

On the first appearance of a flooding, the woman should be confined to her bed, and be placed with her hips somewhat more elevated than her head, keeping her at the same time perfectly cool and extremely quiet, debarring her of all food of a heating, stimulant nature, giving her cold liquors to drink sharpened with some agreeable acid, and applying linen cloths wetted in vinegar and water to the loins and private parts. Ice (if to be procured), contained in bladders and laid on the thighs and pubes, may occasionally be substituted.

With the view of moderating the symptoms attending the progress of a threatened abortion, and preventing it if possible from actually taking place, it may be proper, in robust and plethoric

habits, and where the pulse is in any degree full and frequent, to take away a little blood from the arm; after which, if the bowels are confined, we may administer a laxative elyster.

If the discharge is copious, and is accompanied with irregular spasmodic contraction of the uterus, or with severe pain, it will be advisable to prescribe opiates in small and frequently repeated doses, so as to keep up a constant effect, and they may be combined either with refrigerants* or with astringents†, or with both. It is only in such cases as are attended with irregular spasmodic contractions, or with severe pains, that opium is given by the most judicious practitioners. To assist the effect of the medicines, anodyne elysters may be injected from time to time.

Astringent injections thrown up the vagina, and composed of a saturated solution of alum, sulphate of zinc, or the plumbi acetate, or of a decoction of oak-bark, are often employed in floodings; and where the hæmorrhage is slight, or remits for any length of time, they, undoubtedly, will prove beneficial, and ought therefore to be used as mentioned under the head of *Menorrhagia*; but in floodings unaccompanied by any remission, they are by no means likely to afford much relief.

In such cases it will be best to trust to the formation of a coagulum. Rest will be absolutely necessary if we wish the woman to go out her full time, and therefore it is sometimes necessary to confine her for a few weeks, perhaps, to her bed, at the same time that we put her upon an effective course of digitalis‡, giving her

* R. Infus. Rosæ Compos. f. ʒjss.

Potassæ Nitratis, ʒj.
Tinct. Opii, mxx. M.

ft. Haustus, 3tiâ vel 4tâ quâque horâ sumendus.

† R. Confect Opii, ʒj.
Aq. Menth. Virid. f. ʒjss.

Tinct. Catechu,
———Kino, aa f. ʒss. M.

ft. Haustus, 4tis aut 6tis horis capiendus.

Vel,

R. Aluminis, gr. xv.
Gum. Kino, gr. v.
Opii, gr. ss.
Confect. Ros. q. s. M.

ft. Bolus 6tis horis sumendus cum cochil.
iij. Infusi Rosæ Compositi.

‡ R. Pulv. Digital. Purp.
Opii, aa gr. ss.
Confect. Ros. q. s. M.

ft. Pilula 4tis horis sumenda.

* Take Compound Infusion of Roses, one ounce and a half.

Nitrate of Potash, one scruple.
Tincture of Opium, fifteen drops.

Mix them. This draught is to be taken every three or four hours.

† Take Confection of Opium, one scruple.
Mint Water, one ounce and a half.

Tincture of Catechu,
———Kino, of each half a drachm.

Mix them, and give this draught every four or six hours.

Or,

Take Alum, fifteen grains.
Gum Kino, five grains.
Opium, half a grain.
Confection of Roses, a sufficiency.

Mix them, and let this bolus be taken every six hours, with three table-spoonfuls of the Compound Infusion of Roses.

‡ Take Powder of Purple Foxglove,
Opium, of each half a grain.
Confection of Roses, a sufficiency
to form a pill, which is to be taken every four hours.

an anodyne at bed-time, but taking care to keep the bowels in a proper state by some gentle aperient medicine.

Where we cannot prevent the abortion, our study must be to conduct the patient safely through the process; and the point which first claims our attention is the hæmorrhage. Bleeding is an operation employed by some practitioners to check this; but unless the vessels are above their natural force and strength of action, it is not likely to do any good. Indeed the fulness and strength of the pulse are lost much sooner in an abortion than can be explained by the mere loss of blood.

When the means above mentioned have been pursued without the desired effect, and the woman becomes exposed to imminent danger from great loss of strength, it will then be necessary to have recourse to powerful astringents*, such as zinci sulphas and plumbi acetas. Of this last we may give one, two, or even three grains, repeating the dose every three or four hours, according to the urgency of the case. As soon, however, as the hæmorrhage has ceased, a gentle purge of the oleum ricini should be administered, in order to prevent any bad effect from the action of these remedies on the coats of the stomach and intestines. Astringents used internally have, however, been thought by some to possess little effect unless they excite sickness, which is a different operation from what is expected from them.

The application of linen cloths dipped in cold water to the back, thighs, and external parts, will have a much better effect than internal astringents, and ought therefore never to be neglected. The introduction of a small piece of smooth ice into the vagina has often

Vel,
℞ Tinct. Digital. ʒ xx. 4tâ quâq. hor.
ex quovis vehiculo.

Vel,
℞ Infus. Digital. f. ʒss.
Tinct. Cardam. f. ʒij.
Aq. Puræ, f. ʒvj. M.
ft. Haustus quartis horis adhibendus.

* ℞ Zine. Sulphat. gr. ij.—v.

Confeet. Ros. ʒss.

Opii. gr. ss. M.
ft. Bolus. 4tis horis sumendus.

Vel,
℞ Plumbi Acet. gr. ij.
Extract. Catechu, gr. iij.
Opii, gr. ss.
Syrup. q. s. M.
ft. Pilula, 4tis horis capienda cum haustu
Infusi Rosæ Compositi.

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Or,
Take Tincture of Foxglove, twenty
drops every four hours, in a little
water, or any like vehicle.

Or,
Take Infusion of Foxglove, half an
ounce.
Tincture of Cardamom, two
drachms.
Pure Water, six drachms.
Mix them, and let this draught be given
every four hours.

* Take Sulphate of Zine, two to five
grains.
Confection of Roses, half a
seruple.
Opium, half a grain.
Mix them. This bolus is to be taken every
four hours.

Or,
Take Acetate of Lead, two grains.
Extract of Catechu, three grs.
Opium, half a grain.
Syrup, a sufficiency to form a pill,
which may be taken every four hours, with
a draught of the Infusion of Roses.

II H

a very speedy effect in retarding the hæmorrhage. A snow-ball wrapped in a bit of soft linen will have the same effect; but neither of these should be continued so long as to produce pain, or much and prolonged shivering. The heat of the surface may also be moderated by covering the bed lightly with clothes, and admitting a free circulation of air.

The most effectual local method, however, of stopping the hæmorrhage, is by plugging up the vagina*; and this is best done by taking a pretty large piece of soft cloth, dipping it in oil, and then wringing it gently. This is to be introduced with the finger, portion after portion, until the lower parts of the vagina be well filled. The remainder is then to be firmly pressed on the orifice, and fixed by a T bandage, so as to prevent the plug from being displaced. This acts by giving time to the effused blood to coagulate at the mouths of the bleeding vessels, thereby preventing any further discharge. In obstinate cases, previous to the introduction of the plug, we may insert a little pounded ice tied up in a rag or small bladder, if to be procured.

To recapitulate the means which we are to employ for restraining the hæmorrhage: if the pulse be full, hard, and frequent, bleeding is to be resorted to; but if not, we are to trust to digitalis: the application of cold to the thighs and pubes, admitting cool air freely into the bed-chamber, keeping the heat of the body at a low temperature, absolute rest in an horizontal position, and which must be continued during the whole process, however long it may be; cold, acidulated liquors for ordinary drink, light food, taken in small portions at a time, carefully abstaining from every thing stimulant, and plugging up the vagina.

Where any sickness or great feebleness attends on an abortion, the body is to be kept at rest with the head low; and we may at the same time give small quantities of some stomachic cordial, such as a few drops of æther in a little cinnamon-water, or a little peppermint-water with fifteen or twenty drops of the tincture of opium. In very urgent cases, Madeira or diluted brandy may be given, but these are not to be frequently repeated. Where spasmodic contractions attack the stomach, producing sudden and violent pain, a full dose of the tincture of opium conjoined with æther must be ordered immediately. Spasms about the intestines are also to be relieved by opium in some form or other.

Where an abortion is accompanied by strong hysteric paroxysms, besides attending to the state of the discharge, the best practice is to keep the woman very cool, and to give her thirty or forty drops of tinctura opii, with about two drachms of tinctura valerianæ ammoniata in a little peppermint water, every four or six hours. A clyster composed of cold water, with the addition of two drachms of the tincture of assafoetida, is also sometimes of service.

In all cases where a considerable hæmorrhage has begun, but

* See Mr. Burn's Treatise on Abortions.

particularly at an advanced state of pregnancy, the first thing of importance to be inquired into and ascertained is its cause, and this can hardly be done too early; for as long as the accoucheur allows himself to act without this piece of essential information, his practice must necessarily be uncertain, and the life of his patient be exposed to danger. In such cases it will, therefore, be of the utmost importance to subject the woman to an examination, and in effecting this it will be necessary to introduce the hand into the vagina, passing one finger within the os uteri. This will be preferable to the common mode; for in presentations of the placenta this part does not always adhere close to the orifice of the womb, but is sometimes attached inwardly to the collum uteri; and if we trust to the common mode of examination we shall be liable to fail in feeling the placenta, even when its presentation is the cause of the flooding.

If the placenta is in the right place, it is probable, at any rate it is possible, that the hæmorrhage may subside permanently by the aid of an horizontal posture, a low diet, the application of cold, and a use of the other means before noticed; but if, on the contrary, the placenta be placed over the mouth of the womb, however these remedies may afford a temporary relief, we may be assured that the discharge will return; for the next time that a dilatation of the os uteri takes place, and which must recur sooner or later, a fresh portion of the placenta will become detached, and other bleeding vessels unavoidably be opened. Our practice ought, therefore, to be determined by the result of the examination. If it appears that the placenta is in the right place, the means and remedies before pointed out may be trusted in, unless the symptoms be so alarming as to compel us to deliver the woman; but, on the contrary, if the placenta is discovered over the mouth of the womb, or very near thereto, even should there have been only one considerable discharge, we should watch the patient with the greatest vigilance, and proceed to deliver her as soon as the parts are sufficiently dilatable to allow the introduction of the hand without improper force.

In all cases during the last stage of pregnancy where our endeavours to stop or repress the hæmorrhage prove abortive, and the life of the woman becomes endangered by its severity, it will be advisable to deliver her as soon as possible, although we may encounter some difficulty, unless somewhat assisted by the coming on of the natural labour pains. If the ovum be still entire, and the pregnancy considerably advanced, the expulsive action is to be excited by rupturing the membranes.

It sometimes happens in abortions, that the whole ovum does not come away at once, but only the fœtus, and that either a part or the whole of the secundines remain behind. These, by long retention, give rise to an offensive discharge from the vagina, and a febrile state accompanied with hysterical affections. In such instances, instead of endeavouring to extract the remains of the

ovum either with the forceps or fingers, which would be productive of irritation, it will be advisable to keep the parts clean, by injecting an infusion of chamomile flowers with a small quantity of oxygenated muriatic acid; to keep the bowels open with gentle laxatives or clysters; to support the strength by tonic medicines, such as the decoction of cinchona joined with a few drops of muriatic acid, and by light nourishment, with small portions of wine frequently repeated, and plenty of subacid fruit: whilst at the same time we procure rest or allay irritation by opiates, if necessary.

After every abortion the woman should be confined to bed for a few days, as getting up too soon is apt to produce a debilitating discharge. Should any morbid symptoms present themselves, they are to be obviated by a suitable treatment. If the patient continues weakly for any time, the use of a cold bath, with bark and other tonics, chalybeate waters, a generous diet, and pure air, will be necessary.

It has been before observed, that miscarriages are sometimes induced during the first or second month of gestation by the fundus uteri being retroverted and pressed down between the rectum and the vagina; in which case they are preceded by a difficulty of making water, and a consequent tumour of the bladder, together with a violent pain about the perinæum or rectum. On such occasions draw off the urine with a catheter, and inject an enema with sixty drops of the tincture of opium, if it can be done. Should these symptoms recur after the miscarriage, a wax candle, or a pessary, made by rolling some emplastrum plumbi spread on linen, may be introduced into the rectum, and worn as a compress to prevent the return for a few days, till the parts recover their strength.—See Dr. Hunter's *Tables of the Gravid Uterus*, and "*London Medical Observations*," vol. iv. p. 388.

In natural presentations, it sometimes happens that after labour has commenced and continued for some time, the action of the uterus becomes very weak and insufficient to expel the child, or it is suspended, in which case it is necessary to renew it. Here the *secale cornutum* (ergot of rye) is a remedy which is highly spoken of, and has been employed with great benefit by several accoucheurs. It has also been recommended as a preventive of hæmorrhage to patients who have formerly suffered from floodings subsequent to the birth of the child, from an unfavourable separation of the placenta. In this case a sufficient dose, from one scruple to half a drachm, finely powdered, should be given a quarter of an hour previous to the probable delivery of the child. If an infusion is preferred to the powder, one drachm of the *secale* infused in three ounces of boiling water for about half an hour, and the liquor then poured off clear, may be considered as an efficient dose.

The *secale* ought never to be given where there is a natural defect, either in the pelvis or soft parts, capable of producing a powerful obstacle to the expulsion of the child. In all cases where

the abstraction of blood is indicated, this medicine will likewise be improper. Previous to giving the *secale*, the labour should have made some progress, the parts should be well lubricated with the natural mucus, the uterine orifice fully dilated, and all the soft parts prepared for delivery. Moreover, the accoucheur should, by careful examination, &c., be satisfied that delivery is retarded only by defective action of the womb: the presentation ought to be a natural one, and the child so situated that delivery can be effected in the end by the efforts of the uterus.

It may be proper to observe here, that in one or two cases of severe uterine hæmorrhage succeeding delivery, wherein the patients became nearly exhausted, fatal syncope has been prevented by the operation of a transfusion of blood, and the life of the woman preserved.*

DISEASES OF THE PUERPERAL STATE.

PARTURITION, it is well known, is a natural process, and cannot therefore be considered as a disease; but still it often lays the foundation of many distressing complaints, and is now and then attended suddenly even with fatal consequences.

On the separation of the placenta, and on the sudden removal of pressure on the expulsion of the uterine contents, every parturient woman encounters some degree of risk; the latter is, indeed, not unfrequently a source of danger, which has not been sufficiently insisted upon and practically attended to.

A woman sometimes appears safely put to bed after an easy and natural labour; she has suffered no unusual loss of blood on the separation and removal of the placenta; the uterus, on the application of the hand, is found well contracted, and the patient, thus far at least, appears in a fair way to do well: but, notwithstanding these favourable appearances, and perhaps even during the congratulations of her friends upon the termination of her sufferings, she complains of a degree of faintness, attended with an inexpressible sensation of sinking: this is followed by restlessness, with an anxious, depressed countenance, and occasionally by pain and a sense of constriction at the pit of the stomach; and expressions of alarm for her approaching dissolution are not unfrequently repeated. Shortly afterwards the restlessness increases, the countenance becomes more dejected and ghastly, the pulse gradually sinks and fails in its stroke, the oppressive constriction on the epigastrium becomes intolerable, so as considerably to affect respiration: and

* See London Medical and Physical Journal for February, 1827.

if relief to these symptoms be not speedy, she becomes shortly a corpse.

That a woman may die suddenly from the rupture of a vessel in the brain, or in the thoracic or abdominal cavities, during the violent efforts of labour, is a conclusion sufficiently natural; but in accidents of this nature there would be symptoms of pressure on the sensorium in the one instance, and of internal hæmorrhage in the other; and the cause of death on inspection would be apparent.

To theorise or reason on a parturient woman suddenly falling into deliquium animi, and almost immediately expiring, is inconsistent with the nature of this work; but it has been attributed to the removal of pressure from the parietes of the abdomen, and the contents of its cavity.

At the commencement of faintness without loss of blood, we should have recourse to the exhibition of brandy, or other spirits, undiluted or diluted, according to the urgency of the symptoms and the rapidity of their progress, and in such quantity as may seem adequate to answer the intended purpose. That being attained, and the patient relieved, the medicated stimuli, as camphor, æther, volatile spirit, cordial tinctures, &c., may be substituted. Moderate pressure upon the abdomen with the hand, or a bandage applied round the body, will assist the general intention; and the patient ought, on no consideration, to be allowed to raise herself from the recumbent posture till she be so far recovered as to warrant security from the recurrence of the symptoms of alarm and danger.

The most usual complaints, however, which occur after delivery, and which demand the attention and assistance of the medical practitioner, are as follow:—viz.

AFTER-PAINS.

Shortly after delivery these usually come on, and with some women prove remarkably severe. The quicker the labour has been the slighter will they prove in general. Women with their first child are seldom much troubled with after-pains; but as the uterus is thought to contract less readily after each future labour, so they are more liable to suffer from them in any succeeding delivery than in the first.

When after-pains prove so troublesome as to deprive the patient of her rest, it will be necessary to have recourse to opiates joined with other antispasmodics.* Heated cloths, or bladders filled with

* R. Aq. Cinnam. f. ʒj.
Tinct. Opii, mxxx.—xlv.

——— Castor. f. ʒss.
Syrup. Violæ, f. ʒij. M.
ft. Haustus horâ somni sumendus.

* Take Cinnamon Water, one ounce.
Tincture of opium, thirty to forty-five drops.
——— Castor, half a drachm.
Syrup of Violets, two drachms.
Mix them. This draught is to be taken about bed-time.

warm water, may be applied as an external fomentation. These means are to be assisted by keeping up a sufficient pressure on the belly at the same time, by means of a broad bandage.

COSTIVENESS.

This is apt to prevail after delivery, and should always be removed by a laxative clyster, or some gentle purgative,—such as a solution of some neutral salt and manna, or about an ounce of the oleum ricini.

FLOW OF THE LOCHIA.

In all women a certain degree of hæmorrhage usually takes place after delivery, produced by the removal of the placenta, which thereby lays bare the mouths of the blood vessels in the inside of the uterus; and this commonly continues until the womb contracts to such a size as to close them up again. The discharge for the first four or five days consists usually of florid blood, after which time it assumes a mucous appearance, and so ceases gradually.

In weak and relaxed habits it sometimes happens, that instead of saturating a cloth now and then, as is natural to all women, the blood gushes out with such rapidity and violence as to run quickly through all the bed-clothes, and even to soak through the bed itself; in which case the patient will be reduced to a state of great debility, if the hæmorrhage is not soon restrained. To effect this, the means recommended under the heads of Menorrhagia and Abortions must be adopted.

Where a suppression of the lochia ensues before the accustomed period, the discharge ought again to be promoted, if possible, by plentiful dilution, and the application of warm fomentations to the parts. Should these means prove ineffectual, gentle evacuation from the bowels must be made.

FEBRIS LACTEA. THE MILK FEVER.

About the third or fourth day after delivery, the breasts generally become turgid and painful, from the secretion of milk which

Vel,
℞ Castorei, gr. v.
Camphoræ, gr. iij.
Opii, gr. jss.
Confect. Rosæ, q. s. M.
ft. Bolus capiat horâ somni.

Or,
Take Castor, five grains.
Camphor, three grains.
Opium, one grain and a half.
Confection of Roses, a sufficiency
to form a bolus, which may be taken at
bed-time.

then takes place in them. When this is moderate and free, no inconvenience will be experienced; but when copious, and accompanied by any obstruction in the lactiferous tubes, in consequence of the use of some repellent application, or of an exposure to cold, the breasts will then become hard, swelled, and painful, and a small fever will arise, accompanied by nausea, restlessness, pains in the head and back, and a considerable degree of thirst.

To prevent any consequences of this kind, it will always be advisable to apply the child to the breasts at a very early period after delivery. By delaying to do so immediately on the secretion of milk commencing, the breasts are not only apt to become much enlarged and distended, but the nipples are often so much retracted that the child cannot lay hold of them without the greatest difficulty.

Where the mother's health will not admit of her suckling the child, or any other thing happens to prevent it, she should be careful to have her breasts drawn three or four times a-day by some other person; and, with the view of preventing a copious secretion of milk, she should use a very spare diet, keep her body perfectly open with laxative medicines, and abstain as much as possible from all liquids. This mode of proceeding will be far preferable to the use of repellent applications to dry up, or put a stop to the secretion.

If any degree of fever arises, besides confining the patient to a spare diet, keeping her very quiet, and obviating costiveness by means of cooling laxatives, we may give her small and frequently repeated doses of antimonials, together with refrigerants,—such as the nitrate of potass, as advised under the head of Simple Fever.

INFLAMMATIONS AND TUMOURS IN THE BREASTS.

From exposure to cold, and neglecting to put the child at an early period to the breasts, or to get them drawn by some other person, accidents of this nature happen very frequently to lying-in women.

With respect to the mode of treating these kind of tumours, practitioners differ very much; some asserting that discussion should always be attempted, and others, that they ought to be allowed to suppurate; as, when the discussion does not succeed, there may be some danger of inducing a scirrhus affection of an obstinate nature. I think the same practice should be adopted in this case of inflammation as in every other, and that the discussion of the tumour ought by all means to be attempted on its first appearance; the distress and pain which always attend on a suppuration of the mamma being very great. When the inflammation and swelling have been of such long standing as to show an evident tendency to suppurate, any attempt to discuss the tumour will not be advisable.

Where discussion is proper, recourse should be had at a very early period to a strict pursuance of the antiphlogistic plan. The strength is to be supported by a cool, spare diet; the body is to be kept perfectly open with mild laxatives; febrile heat is to be abated by refrigerants—such as the nitrate of potass, with the aid of frequent small doses of some antimonial, such as the pulvis Jacobi, pulvis antimonialis, or solution of tartarised antimony; pain and irritation are to be allayed by sufficient doses of opium; and the inflammation, when considerable, is to be abated by means of leeches applied to the part, as likewise by the constant application of linen cloths dipped in some sedative lotion.* To assist the effect of these means, the breasts are to be evacuated frequently throughout the course of the day, but more particularly the one diseased, either by the infant or some other person accustomed to the business. When they are so much swelled as not to allow of laying hold of the nipple, the proper glasses made for that purpose should be employed.

If the tumour proceeds to suppuration, notwithstanding we may have used every endeavour to prevent it, we should then assist the operations of nature by the application of emollient poultices and fomentations. As soon as the suppuration is completed; the tumour should be opened, after which it may be dressed with dry lint, and a pledget spread with some kind of digestive ointment be laid over all. Should any fresh suppuration ensue, which not unfrequently happens, the same mode of treatment must be adopted; and that proper pus may be formed, cinchona, with a moderate quantity of wine, will be necessary.

EXCORIATIONS OF THE NIPPLES.

From the constant state of moisture in which these parts are kept with those who give suck, such occurrences are very apt to happen. When excoriations do arise, the parts should be washed two or three times a-day with a diluted solution of alum, the acetate of lead, or a few drops of the liquor plumbi subacetatis, in rose-water, and then be sprinkled with a little powder of calamine or tutty, or they may be dressed with a little of what is recom-

* ℞ Liquor. Ammon. Acetatis,
Spirit. Rectific.
Aq. Distillat. āā ʒij. M.

ft. Lotio.

Vel,

℞ Ammon. Muriat. ʒij.
Acidi Acetic. dilut. f. ʒij.
Spirit. Camphoræ, f. ʒss.
Liquor. Plumbi Subacet. m xvj. M

* Take Solution of Acetate of Ammonia,
Rectified Spirit,
Distilled Water, of each two
ounces.

Mix them and use them as a wash.

Or,

Take Muriate of Ammonia, two drs.
Acetic Acid diluted, two ounces,
Camphorated Spirit, half an oz.
Solution of Subacetate of Lead,
twenty-four drops.

Mix them.

mended below*, thinly spread on lint, and so be applied to the parts. To prevent the sore from being aggravated by sticking to the woman's clothes, a little cup made of wax may be laid over the nipple, which is the part most apt to suffer. If only one nipple is affected, the child may be confined to the other; but if both are affected, and the pain occasioned by its sucking is too great to be borne, the woman must then desist from the duties of a mother until the excoriations are somewhat healed, taking care, however, to have her breasts drawn regularly twice or thrice a-day. As long as we are under the necessity of applying any of the preparations of lead to the nipples of the mother, it will be prudent not to suffer the child to suck her, as there is reason to fear that it might be materially injured by so doing. Where this cannot, however, be dispensed with, the part should be well washed with a little warm water each time previous to giving the child the breast.

When great soreness of the nipples has taken place, it has been proposed, with the view of protecting them, to use an artificial teat, by which the child will be able to suck tolerably well, and the nipple itself, being undisturbed, to heal soon. The way in which one of these substitutes is prepared, is to procure a fresh teat from a heifer, and, scooping out the inside, to well steep it in cold water, then put it into spirits till an hour or two before using it, when it must be again laid in water to take away the spirituous taste. The teat is then to be wiped dry, and sewn closely and firmly at the edges to the row of holes made in the shield. Such shields are usually made of silver, and may be procured from any instrument maker; but ivory ones turned on the same model will answer equally well. The teat ought to project somewhat longer than the shield, that it may the more readily yield to the infant's mouth. Great attention should be paid to washing the whole thoroughly after suckling, and to keep it constantly in cold water. A woman is often capable of giving milk with a flat or even concave surface, by drawing out the nipple with a glass tube that has a small ball to it, by which a vacuum is produced immediately the glass is removed; the child being put to the breast will keep it out by sucking until satisfied.

MILIARY ERUPTIONS.

IN consequence of keeping women very warm, and of using a heating diet, it not unfrequently happens that miliary eruptions, attended with some degree of fever, arise during a puerperal state. (See *Miliary Fever*, vol. i. p. 210.)

* R. Sodæ Sub-boratis, ℥ss.
Mellis, f. ℥ss.
Farinæ Tritic. q. s. ad consistentiam
idoneam. M.

* Take Sub-borate of Soda, half a dr.
Honey, half an ounce.
Wheaten Flour, a sufficiency to
give the whole a proper consistence.

PHLEGMASIA DOLENS PUERPERARUM.

This disease was first fully described in 1750 by Puzos in his "Memoires sur les Dépôts Laiteux;" and soon afterwards Levret noticed it, as "un engorgement laiteux dans le bassin et les extrémités inférieures." Both these authors supposed that it was occasioned by a metastasis of the milk from the breasts to the pelvis and lower extremities.

Mr. White, of Manchester, in 1784, in his "Inquiry into the Nature and Cause of that Swelling in one or both of the lower Extremities, which sometimes happens to Lying-in-Women," was the first in this country accurately to describe the disease, and gave it the name of Phlegmasia alba dolens. Of late years it has engaged the attention of Dr. D. Davies, Dr. R. Lee, and others in England, and that of Velpeau, Bouillaud, &c. in France; and these later observers have done much to elucidate the chief pathological conditions of the disease, and its dependence on obstruction of the femoral vein. It seldom attacks both limbs at the same time, but it not unfrequently happens that as one limb recovers, the other becomes affected, or the arm of the same side will become swollen and painful.

The left limb is more frequently diseased than the right.

Phlegmasia dolens seldom appears before the fifth or sixth day after confinement; and sometimes two or three weeks will elapse before any decided symptoms can be detected. The patient first complains of a heavy, dull pain in the pelvis, groin, or upper part of the thigh, sometimes in the calf or at the back of the knee; the breasts, although previously distended, become flaccid, and the lochial discharge disappears.

The pain is more violent when the thigh is extended and the easiest position for the limb is a state of semiflexion.

The pain extends chiefly along the course of the crural vessels, and red lines of inflamed lymphatics may sometimes, for the first day or two, be noticed on the inner and front part of the thigh; but these soon disappear as the limb increases in size. In the course of eight-and-forty hours the pain diminishes and the limb begins to swell, first at the groin, and thence gradually downwards. In a few days it will attain double its usual size. The slightest movement or pressure aggravates the pain. When the swelling has reached its maximum, the skin becomes of a dead white, smooth and glossy, and the blue lines which mark the course of the veins are no longer to be seen.

It has been said by all authors, that the limb does not retain the impression of the fingers; but this is not exactly a correct statement; for although it will not *pit* as easily as in common anasarca, yet a continued and steady pressure for a short time will always leave a considerable depression.

If the limb is punctured, no relief is afforded to the distension, and nothing but a few drops of blood will escape.

The diseased side is always of a higher temperature than the other.

Phlegmasia dolens is generally accompanied by a considerable amount of fever, with evening exacerbations. The pulse is quick and small, and there is generally intense thirst, sleeplessness, with a hot dry skin, sometimes alternating with profuse perspirations which, however, afford no relief. The disease generally terminates by resolution, the effused fluids are re-absorbed, the thigh first recovering its natural size, and the amendment gradually extending downwards to the foot.

Occasionally, instead of this favourable termination, abscesses will form in the cellular tissue under the skin, or between the deep-seated muscles under the fascia lata. This complication always renders the recovery more tedious and doubtful, and is the usual cause of its occasionally fatal result.

Dr. Davies believes that the proximate cause of phlegmasia dolens is a violent inflammation of one or more of the principal veins, within and in the immediate neighbourhood of the pelvis, producing an increased thickness of their coats, and a gradual coagulation of their contents, and occasionally a destructive supuration of their whole texture; and, in consequence, the diameter of these vessels is so diminished as to be rendered mechanically incompetent to carry forward the venous blood brought to them by their contributories.

Dr. Hosack, the learned professor of the Practice of Physic at the College of New York, much doubts that the *primary* seat of phlegmasia dolens consists in a violent and destructive inflammation of the iliac veins and their contributing branches; he takes a more general view of the disease and thinks it may be traced to an inflammation of the limb, involving *all* its parts,—muscles, cellular membrane, cutis, lymphatics, glands, nerves, and blood vessels. The arteries, however, have never on dissection been found to be diseased.

Much is still required to complete the pathological history of this disease, but in the few cases which have been examined the following appearances have been noted; in the cellular tissue, small abscesses diffused amongst the superficial or deep-seated muscles, sometimes large concentrated abscesses in the glutæal, poplitæal, or even in the plantar region. The whole of the cellular tissue is infiltrated with serum.

The lymphatic glands of the groin are always enlarged and inflamed.

The symphysis pubis and the sacro-iliac synchondroses are usually found inflamed and bathed in a purulent liquid, and even the* acetabulum of the affected side has contained a teaspoonful or two of pure pus.

* Velpeau, "Archives Générales de Médecine."

The femoral vein and its branches (particularly the vena profunda femoris), are thickened and obstructed with coagulated blood mixed with pus, and this appearance occasionally extends as high as the vena cava.

Most authors have agreed that general blood-letting is inadmissible in this complaint, except in unusually robust females. Leeches, however, applied to the groin, at the very onset of the disease, and when the pain is excessive, afford much relief; but even these should be applied in moderation, and but once or twice: for although they relieve the local pain, they possess little or no influence over the course of the disease, and our object should be as much as possible to husband the strength of the patient; to carry her through the long convalescence which must necessarily follow.

For the same reasons, saline aperients should be given only in the earlier stages of the complaint, and should be soon exchanged for the decoction of bark, the mineral acids, and a general tonic regimen, including a moderate allowance of wine.

A full opiate at bed time is of great service in allaying the pain and irritability.

The limb should be constantly fomented with flannel cloths wrung out of a decoction of poppy-heads, or a watery solution of opium. After a few days, when the inflammation has partially subsided, it will be advisable to bandage the limb lightly; and the bandage should be reapplied daily and the firmness of its pressure gradually increased.

Frictions with camphorated oil, or simply with the hand, are of much service when the œdema becomes chronic, and continues, as it often will do, for several weeks.

When large purulent depôts take place, they should be opened as soon as discovered and in the most dependent parts.

HYSTERITIS, METRITIS, OR INFLAMMATION OF THE UTERUS.*

Hysteritis, or Acute Inflammation of the *substance* of the womb, is of rare occurrence except after Abortion or Parturition.

It usually appears on the second or third day after the birth of the child, and is preceded by shiverings, and a general feeling of uneasiness and anxiety, without any apparent cause to which the symptoms can be attributed. In a few hours the local symptoms show themselves, and the patient complains of severe pain in the

* This disease, as well as the two which succeed, belong properly to the class of Pyrexia; but as the first two do not often occur in the unimpregnated state, and the last is a disease confined to that of the puerperal, I have judged it most proper to insert them all here.

hypogastrium, which is much increased by the pressure of the hand on the uterus, and is easily distinguished from real after-pains by its unremitting character. In this early stage of the disease the after-pains may still be present, and cease, during their continuance, a great aggravation of suffering; but when they have subsided, the same persistent tenderness remains over the region of the uterus.

Soon afterwards the secretion of the milk is diminished, or entirely ceases, and the lochial discharges are suppressed.

The uterus itself is unnaturally hard and enlarged, and the inflammation often extends posteriorly to the rectum, in which case it occasions a distressing tenesmus; more frequently, however, it attacks the urethra and bladder, and renders the passage of the urine painful and difficult, and sometimes impossible without the aid of the catheter.

If the inflammation should unfortunately spread from the uterus to the peritonæum which invests the cavity of the abdomen, this disease becomes much more dangerous, and will probably terminate fatally. In these cases we see a peculiar look of suffering in the face, a sudden increase of debility and tympanitis, and vomiting, with a very small pulse and coldness of the extremities. Death usually takes place within the first week; but occasionally a sudden discharge of fetid matter from the vagina (as from the rupture of an abscess) will relieve the patient and she may gradually recover her strength and health.

The post mortem examinations (when death has occurred early in the disease) have shown the uterus to be unnaturally hard, and of a deep red colour, but more frequently it is found softened, pulpy, and infiltrated with pus, which oozes out under the pressure of the hand. Sometimes we meet with distinct abscesses, varying in size from a pea to that of a small walnut.

Purulent matter has also frequently been traced through the uterine veins and fallopian tubes to the ovaries.

Gangrene has often been described as one of the consequences of metritis, but no well authenticated case is known; and Dr. Clarke truly observes, "that he is satisfied from experience that this happens to persons not habituated to the examination of the bodies of women who have died in child-bed, and they have mistaken the appearance of that part of the uterus to which the placenta had adhered for gangrene."

The termination of metritis (especially when the inflammation does not extend to the peritonæum) is generally favourable, because, as has been justly observed, the patient at such a time is necessarily under the observation of her medical attendant, and the appropriate remedies are speedily applied.

Causes.—Inflammation of the uterus, although it may occasionally appear without any apparent cause, can generally be traced to some irritation or injury occurring during the progress of parturition. And when in a tedious although otherwise *natural* labour, we

reflect on the long continued action of the uterus upon the body of the child, and consider that the cervix uteri, and especially its anterior lip, is often pushed downwards into the pelvis, and forcibly compressed between the head of the child, and the pubes of the mother; that this compression may continue for many hours, and that the pains may be sufficiently violent to make the anterior lip protrude externally; we may reasonably be astonished, not that inflammation should occasionally, but that it should so seldom, be the consequence of such efforts.

In *preternatural* labours the necessary employment of instruments,—in arm presentations, the turning of the child,—in cases of adherent placenta, the introduction of the hand for its removal, are all causes sufficient to account for the occasional occurrence of inflammation.

Treatment.—By attention to the disease on its first approach, we may often subdue it, and prevent the inflammation from proceeding to any great height. Our immediate and speedy care ought, therefore, to be directed towards diminishing the quantity of the circulating fluids, and weakening the action of the heart and arteries; and this is to be done by drawing blood from the system, regulating the quantity which we take away by the violence of the symptoms, the state of the pulse, and the age and habit of the patient. In repeating the operation, we are to be governed by the same circumstances, and by the effect produced by the former evacuation. In plethoric habits, a second or a third repetition may be necessary; but in those who are less robust, if the inflammatory symptoms are not entirely carried off by the first bleeding, it may be more advisable to draw off blood by the application of six or eight leeches to the belly, than to make use of the lancet again.

To remove the tension, and alleviate the pain and soreness, flannel cloths, wrung out in a warm decoction of bruised poppy-heads and camomile-flowers, with an addition of about an eighth of spiritus camphoræ, may be kept constantly applied to the abdominal region. In using fomentations, due care must, however, be taken, that they are not applied so wet as to run about the bed, and thereby occasion inconvenience to the patient.

When by free bleedings we have subdued the intensity of the pain, it will be advisable to administer a full dose of opium combined with calomel, one or two grains of the former with three or six of the latter drug; and this medicine should be continued in smaller doses ($\frac{1}{4}$ of a grain of opium with two grains of calomel), every three or four hours, when we have reason to fear that the inflammation may spread to the peritoneal cavity. At the same time the bowels, if constipated, should be relieved by castor-oil or any other mild aperient: strong and drastic purgatives should be avoided, as they can only aggravate any previous irritation.

Injections of warm water into the vagina have been much recommended and are certainly useful when the vaginal discharges are acrid and fetid; but as this duty must generally be entrusted

to the nurse, it is safer, as a general rule, merely to enjoin frequent sponging with warm water of the external parts solely. Vesicatories have been frequently employed in the later stages of this disease, but in general with little benefit, and when applied they deprive us of our chief means of diagnosis, as it is obviously impossible to ascertain with accuracy the bulk and sensitiveness of the uterus when the hand is pressing on the blistered surface of the cutis.

The diet, during the acute stage of the disease, must be restricted to food of the lightest kind—barley water, thin arrow-root, or gruel; and on the amendment of the symptoms we may gradually allow the use of broth, or beef tea. Too sudden a return to the usual manner of living, or any indiscretion in the use of stimuli, will not unfrequently occasion a serious relapse.

PERITONITIS, OR INFLAMMATION OF THE PERITONÆUM.

The peritonitis of the puerperal state appears to arise generally from extension of an inflammation of the uterus to its investing membrane, and from thence it may spread to the whole surface of the abdominal cavity.

Peritonæal inflammation frequently occurs in women after delivery, and is produced by the same causes which give rise to an inflammation of the uterus, viz. tedious and difficult labours, officiousness in the midwife, the use of instruments, the application of cold, and administering heating liquors to excess. The disease has by some authors been called puerperal fever; but this seems improper, as it neither is attended with contagion nor ever prevails epidemically; and therefore the term is more properly applicable to the disorder treated of under that particular head.

In some cases of peritonitis the inflammation attacks only a small portion of the membrane at first, and is afterwards communicated to the whole of it; and in others it occupies the whole at once. The patient usually is seized with rigors and shiverings, thirst, fever, and an accelerated pulse, and soon feels considerable pain, with soreness, either in a particular part of the abdomen, or over the whole of it. The uneasiness and pain increasing rapidly, the abdomen becomes puffed up and swelled to a size nearly equal to what it was before delivery. From the inflamed state of the parts, and the exquisite pain which prevails, the very weight of the bed-clothes becomes irksome and insufferable; and in order to support it, the patient is obliged to lie on her back with her knees slightly elevated. She is, moreover, incapable of bearing the least motion, or turning in bed.

The stomach in most cases is much affected, and a constant sickness, with a vomiting of bilious matter, ensues. The state of the intestines is variable; sometimes costiveness prevails, at others a purging, and sometimes the body is perfectly regular. The

bladder likewise becomes affected, and there arises a constant inclination to make water; which comes away, however, in a very small quantity at a time.

As the disease advances, and tumefaction augments, great difficulty of breathing ensues; and in consequence of the general determination to the bowels, the secretion of milk becomes much diminished, and is at last entirely stopped; the breasts are flaccid and empty, and the lochial discharge is perhaps wholly suppressed.

The system is usually affected with a mixture of general inflammation and symptoms of irritation; the pulse is frequent, small, and contracted, beating about 120 to 130 in a minute; the skin is dry and hot, with flushing of the face and redness of the eyes; the tongue is white and dry, with the prevalence of great thirst; the appetite is diminished, but not wholly lost; and the patient is restless, uneasy, and gets little or no sleep.

The disease continuing to proceed in its course, all the symptoms become highly aggravated, and at last a total cessation of pain ensues; the pulse becomes still smaller, but is at the same time more frequent; cold, clammy sweats break out; the urine and fæces come away involuntarily: the extremities are cold; and the patient is carried off in the course of the sixth, seventh, or eighth day.

Chronic inflammation of the peritonæum is not a very unusual sequela of the acute species, when the patient survives that. In acute peritonitis, we may regard the following appearances in a favourable light:—The pulse becoming fuller or less frequent, the skin moister and cooler, the respiration less laborious, the urine being voided in a proper quantity and less frequently, the return of the milk in the breasts, the re-appearance of the lochial discharge, a gradual diminution of the pain and tension in the abdomen, with the ability of remaining in a sitting posture, and the coming on of a gentle diarrhœa towards the close of the disease. On the contrary, we are to consider the sudden cessation of pain, with a sinking pulse, effusion, and tumefaction, as fatal symptoms.

During the early stage of the chronic affection, the patient is capable of continuing ordinary occupations, but always complains of an increase of pain or soreness across the abdomen, from any motion or fatigue. There is thirst, and want of sleep and appetite. As the disease advances, the features appear sharp and contracted, and the countenance pale, sallow, and doughy. In common cases, there is no great tension of the abdomen, but a degree of hardness may frequently be distinctly traced. Costiveness usually prevails, and increases the distress of the patient. Great emaciation and debility succeed, and she becomes ultimately exhausted and hectic.

All ages are subject to chronic peritonitis, and in children it is by no means uncommon, and constitutes one of the forms of marasmus. At that period of life it appears to be closely connected with the scrofulous diathesis.

Peritonæal inflammation is to be distinguished from enteritis by the pain being permanent; by its being increased by pressure, even before any tension has taken place on the abdomen; by its producing no inclination to go to stool; and by its not being diminished if this evacuation should take place spontaneously.

The appearances on dissection have been those of inflammation in the peritonæum covering the different viscera, as the stomach, liver, spleen, omentum, intestines, &c.; but that which covers the uterus and bladder is usually found in a higher state of inflammation than any other part. Moreover, there is a remarkable change in the omentum, which is frequently as thick as a person's hand*, and there is generally perceived in the cavity of the abdomen a large quantity of a fluid resembling serum, mingled with pus, and intermixed with shreds of coagulable lymph, or portions of solid matter, similar to what is mentioned under the head of Puerperal Fever. It seldom happens that gangrene or mortification of any of the viscera is to be observed; but the intestines are usually greatly distended with air.

In the cure of this disease, nearly the same mode of treatment which has been advised for an inflammation of the uterus must be adopted. Bleeding from the system, to about sixteen or twenty ounces, should therefore be had recourse to at a very early period, particularly where the patient is of a robust, plethoric habit; and with such it may be necessary to repeat the operation within twelve hours, particularly if the pain remains unabated. In those cases where there is no mixture of phlegmonous inflammation with the symptoms of irritation, drawing blood a second time by the application of a dozen leeches applied to the abdomen, may be preferable to taking it away from the arm.

In the pure peritonitis, local blood-letting should never be solely trusted to, and indeed ought not to be advised until there appears some diminution of pain from general bleeding, or till the constitutional effects occasioned by the local inflammation are partly removed, and the disorder thereby reduced to a state more nearly approaching to a simple topical affection. Then the repeated application of several leeches to the abdomen, so as to keep up a copious flow of blood, will be useful.

An occasional irregularity in the complaint often occurs, which is liable to mislead the practitioner; and that is, at the very first attack there is sometimes so great a degree of prostration of strength, or seeming debility, accompanied likewise by a pulse scarcely perceptible at the wrist, as might induce us to consider the patient nearly at the point of death, and unequal to undergo the treatment here recommended. These appearances, however, may be supposed to arise from the inflammation extending to the peritonæal coat of the stomach and intestines. Here the violence of pain and tenderness on pressure (and not the state of the pulse),

* See Morbid Anatomy, by Dr. Baillie.

must be the chief criterion to determine our practice; and if *they* should be found exquisite, no accidental symptom should lead us from trusting chiefly to the lancet. Such a decision will soon be justified by a greater freedom in the action of the arterial system, by an abatement of the languor, and by a diminution of the pain and tenderness.

Emollient and antispasmodic fomentations to the abdomen, by means of flannel cloths wrung out in a warm decoction of equal parts of camomile-flowers and bruised poppy-heads, with a small addition of rectified spirit or spiritus camphoræ, will be proper remedies in all cases of peritonitis, and ought therefore not to be neglected.

Some cases are recorded in a late publication* attesting the good effects of cold applications, by linen cloths dipped in camphor mixture and water, in this disease.

Under an apprehension that the application of a blister to the abdomen might prove injurious by its irritating effect, some physicians have objected to advise it in peritonitis; while others, again, have recommended it to be employed, under the idea that its determining the inflammation to the external parts, and thereby lessening it on the internal ones, will greatly counterbalance any excitement it may occasion. When the constitutional effects occasioned by the local inflammation are partly removed by general bleedings, and the disorder is reduced to a state more nearly approaching to a simple topical affection, there can be no doubt, I think, of the propriety of blistering the abdomen.

Probably more benefit might result, generally speaking, not only in this and other visceral affections, by remote counter-excitement, than from the prevailing practice of employing it in the immediate vicinity of the diseased organ. Thus it might prove more remedial to blister the upper parts of each thigh in peritonæal inflammation, and to apply fomentations or linen cloths dipped in camphor mixture and water, as may be judged most proper, over the region of the abdomen. A similar practice is certainly most salutary in phrenitis, and perhaps it might be safely extended to acute affections of the belly and chest.

The bowels, during the whole course of the disease, should be occasionally relieved by moderate doses of castor oil, or any other gentle aperient; but, next to blood-letting, our chief hope of subduing the inflammation must rest on a steady administration of calomel and opium, as recommended in the article "*Hysteritis*."

Emollient clysters may be administered during the intervals of our employing purgatives, as they will not only assist in keeping the bowels open, but will act likewise as internal fomentations.

Should there prevail great irritation at the stomach, with frequent vomiting, the patient should be directed to drink freely of diluted mucilaginous liquors, taking every two or three hours a saline

* See Observations on Peritonitis, by T. Sutton, M.D.

draught in the act of effervescence, with an addition of about twelve or fifteen drops of the *tinctura opii*.

In order to determine the circulating fluids to the surface of the body, and excite a slight degree of perspiration, we should administer small and repeated doses of some diaphoretic*; and to procure sleep and alleviate pain, having previously bled sufficiently, we may make an addition of opium, increasing the quantity according to its effects. These may be washed down with two or three table-spoonsful of the *mistura camphoræ*, which will be likely to prove a serviceable medicine.

Where the urine becomes suppressed, by the inflammation having extended in a high degree to the bladder, a warm bath, with an occasional use of the catheter, may be necessary.

In the early stage of the disease, where phlegmonous inflammation simply prevails, it might be of service to make use of the nitrate of potass and other refrigerants; but at a more advanced period, and where symptoms of irritation arise, they would be improper. When these ensue, the cinchona bark, with a moderate quantity of wine, ought to be given. Should the stomach not be capable of retaining the powder, a decoction or infusion may be tried, with a small addition of the *tinctura calumbæ*.

If a gentle diarrhœa should come on in the course of the disease, it is by no means to be checked, unless when violent, as it may prove critical.

The oil of turpentine is a remedy which has been strongly recommended in puerperal peritonitis by Dr. Brennan, of Dublin, and is said to have been employed by him with very favourable effects in several instances of the disease. In extreme or very urgent cases, after the failure of the other means which have been pointed out, it may be worthy of a trial.

Throughout the whole period of the disorder the patient is to be supported by food of a light, nutritive nature, administered in small quantities at a time, and repeated frequently, so as never to overload the stomach.

Where effusion in the cavity of the abdomen with tumefaction takes place, no relief can be obtained by medicine; death will be the infallible consequence.

Chronic peritonitis, the occasional sequela of acute, especially

* R. Pulv. Antimonialis, gr. ij.
Confect. Rosæ, gr. x. M.
ft. Bolus quartis horis capiendus.

Vel,
R. Pulv. Jacob. gr. v.
Opium, gr. ss.
Confect. Cort. Aurant. q. s. M.

Vel,
R. Pulv. Ipecac. Comp. gr. x. pro dos.

* Take Antimonial Powder, two grs.
Confection of Roses, ten grains.
Mix them, and take this bolus every four hours.

Or,
Take James's Powder, five grains.
Opium, half a grain.
Confection of Orange Peel, a sufficiency to form a bolus.

Or,
Take Compound Powder of Ipecacuanha, ten grains for a dose.

when the depleting plan has not been sufficiently acted upon, must be treated with warm bathing, leeches, blisters, and small doses of the submuriate of mercury, joined with some active cathartic twice a-week. In the later stages of the disease opium is often indispensably necessary. A light diet of milk and vegetables should be recommended to the patient.

FEBRIS PUERPERARUM, OR PUERPERAL FEVER.

Great soreness, pain, and tension of the abdomen, short anxious breathing, uncommon quickness of the pulse, increased temperature of the body, tensive pain over the forehead, peculiar wildness of the eyes, prostration of the vital powers, suppression or diminution of the milk and lochia, a flaccid state of the mammæ, may be regarded as the pathognomonic symptoms of Puerperal Fever.

Its epidemic prevalence at times is a sufficient characteristic of its nature, because this circumstance never takes place with respect to simple inflammation of the uterus and peritonæum.

It is a disease peculiar to women after delivery, particularly in lying-in hospitals, and is supposed to occasion the death of one half of those who perish in child-bed. Some have doubted if it ought to be regarded as a specific disease, and look on it as a simple modification of the known species of fever, taking its origin from the leaven of the prevailing epidemic constitution, whether inflammatory or putrid, modified by the habit of body, the mode of living, the age and temperament of the patient, the season of the year, &c. But Dr. Copland well remarks, — “That the opinion as to puerperal fevers being prevailing typhoid, or other fevers occurring in the puerperal state, may be thus disposed of: 1st. The most malignant form of puerperal fever does not produce typhus or typhoid fevers in other persons, however susceptible they may be, by age and otherwise, of the infection of these fevers, as shown on several occasions both in lying-in institutions and in private practice. 2nd. When other fevers, both typhus and exanthematous, occur in the puerperal state, whether the invasion of such fevers have taken place immediately before or very soon after parturition, these diseases retain their distinctive characters, although they are generally much more severe.”

A stoppage of the lochia has been assigned as one of the causes of puerperal fever; but the circumstance of their being sometimes absent and sometimes present at the attack, and during the progress of the disease, shows their perfect independence of each other. Others, again, have thought that puerperal fever is produced by the absorption of a putrid sanies arising from dead parts of the omentum or mesentery, or some other putrid material in the abdomen or uterus. By a few physicians it has been represented as owing its existence to an undue secretion of milk; while others have sup-

posed that it derived its origin either from a redundancy, or too great acrimony of the bile, the secretion of which appears to be much interrupted during the time of gestation.

The late Dr. Young, professor of midwifery at Edinburgh, was of opinion, that the puerperal fever, strictly so called, is in every instance the consequence of contagion; but he contends, that the contagious matter of this disease is capable only of producing its effects in consequence of a peculiar predisposition given by delivery and its consequences. In support of this doctrine he remarks, in a paper read in the Philosophical Society of that city, that for many years the disease was altogether unknown in the lying-in ward of the Royal Infirmary at Edinburgh; but that after it was once introduced into the hospital, almost every woman was, in a short time after delivery, attacked with it; although prior to delivery she may have lain even for weeks together, not only in the same ward with the infected, but even in the very next bed. He further remarks, that it was only eradicated from the hospital in consequence of the wards being entirely emptied, thoroughly ventilated, and newly painted. After these processes, puerperal females in the hospital remained as free from the disease as formerly.

The contagious nature of this fever has been fully established by Copland, Ramsbotham, Lee, Churchill, and many others, and there is no doubt that the infection may be conveyed from one parturient woman to another by the accoucheur. It is therefore the bounden duty of every practitioner, amongst whose patients this epidemic may have unfortunately appeared, to retire altogether, and absolutely refuse for a season to undertake obstetric duties.

The real cause of puerperal fever is obscure, and not yet satisfactorily ascertained. It is, however, certain, that it has a strong tendency to the typhoid type in an advanced stage, although at its commencement, or during the first twenty-four or thirty-six hours, it is usually attended with inflammatory symptoms, and even with topical inflammation in the abdominal viscera, but more particularly the peritonæum, or membrane which envelopes them.

Under different circumstances, the disease assumes different appearances, and accordingly different distinctions have been laid down by writers between its various forms; but such distinctions are of no use in practice, and may, perhaps, be productive of embarrassment to the practitioner. We may conclude, I think, that the only essential difference in the cases that ought to be considered puerperal fever, consists in their degree of violence, and their being epidemic, or simply sporadic; for it seems to be admitted that whenever the disease exists epidemically, it is more urgent in all its symptoms.

The period at which women are attacked with this disease is uncertain, as in a few instances it has arisen at the distance of a week after delivery; but the most usual time of its attack is on the third or fourth day after that event. The patient is seized at first

with a slight coldness and shivering, succeeded by pains in the head, ringing in the ears, flushing in the face, great anxiety, and restlessness. As the disease advances, the whole abdomen becomes affected, is highly painful to the touch, and much tumefied. She likewise feels great pain in the back, hips, and sometimes in the legs; and she performs respiration with difficulty, the breathing being short and laborious from the pressure against the diaphragm, as well as from an organic affection of the chest itself. If the milk has been previously determined to the breasts, it suddenly disappears on the approach of the disease; but if the attack of fever commences sooner, the milk does not appear. The lochia are altered both in quantity and appearance; the urine is turbid, small in quantity, and voided with pain, and a tenesmus often arises. The skin is hot and dry, the pulse weak and frequent, the number of pulsations being often from 110 to 130 in a minute, thirst prevails, and there is vast prostration of strength, with anxiety, depression of spirits, a disinclination to suckle, carelessness about her child, and watchfulness. To these symptoms are added a tensive pain over the forehead, and a peculiar wildness of the eyes.

A vomiting not unfrequently attacks at the same time, and in so high a degree as to prevent the smallest quantity of food or medicine from being retained on the stomach. The matter thrown up is of a dark porraceous colour, and often of a disagreeable smell. The functions of the *primæ viæ* are likewise much disturbed. At the commencement, they usually go on well; but in the progress of the disease, a severe purging often ensues, particularly in those cases where the abdomen has been much distended, and the dejections are abundant, serous, and putrid. It seldom happens that any violent delirium arises, but the patient is apt to fall into a low, comatose state, wishing by no means to be disturbed.

After one or two days' continuance of these appearances, the fever often acquires a malignant and typhoid tendency, particularly in hospitals and confined situations, or when the state of the atmosphere predisposes to diseases of that nature; the lips, teeth, and tongue are covered with a dark brown fur; aphthæ beset the whole internal surface of the mouth, tongue, uvula, tonsils, and pharynx; the breath is highly offensive; the stools are fetid, of a dark brown colour, and pass off involuntarily; and, in a few cases, purple spots appear on different parts of the body.

Such, in general, is the course of the puerperal fever; the symptoms of which, however, may be often varied, according to the constitution of the patient, the degree of the disease, and its earlier or later invasion after delivery.

Puerperal fever is readily to be distinguished from that affection known by the name of after-pains, by the intervals of ease which attend these last, and by the absence of fever and abdominal ten-

sion; whereas in the former, there is fever, with its concomitant symptoms; great soreness and swelling of the abdomen, and an almost uninterrupted continuance of pain throughout the course of the disease.

Many circumstances evince a dissimilarity between the puerperal and miliary fevers, notwithstanding the symptoms of anxiety and oppression are common to both. In the puerperal fever the rigor is more violent, of longer duration, and not interrupted, as in the other. The pulse at first is fuller and stronger; the skin is more hot; and the tongue, whether moist or dry though generally the latter, is not of a white but brownish appearance.

Peritonæal inflammation is the disease which bears the strongest resemblance to puerperal fever, but it never arises from contagion, or prevails epidemically.

By paying proper attention, we may in general be able to distinguish simple peritonitis from puerperal fever. In the last, the abdominal pain is not the most prominent symptom. There is more despondency, debility, and headache, less heat of the skin, less thirst, and less flushing of the face. In the former, the pain in the abdomen usually increases rapidly after its commencement, and the swelling increases along with it: pressure excites considerable pain, and the fever is inflammatory throughout.

Hysteritis has its proper symptoms, by which it may readily be distinguished from puerperal fever.

The progress of puerperal fever is sometimes so very rapid, particularly in warm climates and hot seasons, as to destroy the patient in forty-eight hours. Even in cases seemingly the most favourable, we should look on the event as doubtful, as the complaint is apt to be accompanied with delusive remissions; and indications arise in its progress which are by no means equal to the danger.

The risk seems, however, to be greater in proportion as the accession is sooner after labour. When the disease comes on at a late period after delivery, the depression of strength is usually less considerable, the tumefaction of the abdomen is less extensive, and the other symptoms are not so violent, and consequently there will be a greater chance for the woman's recovery.

The re-appearance of the lochia, and a gradual subsidence of the abdominal tension and soreness after copious stools, the pulse at the same time becoming slower, with a moist skin, may be regarded in a very favourable light. On the contrary, an agitated countenance, with a hurried, unconnected manner of speaking, constant sighing, attended with a tossing about of the arms, pain and oppression at the chest, visual deceptions, imaginary strange sounds and voices, muttering and stupor, are to be considered as unfavourable symptoms. An extensive swelling of the belly, so as to sound on striking it with the fingers, sudden cessation of pain, irregularity in the pulse, coldness of the extremities, clammy moisture diffused over the whole body, frequent dark-coloured and

fetid evacuations by stool, and an indifference to all external objects, denote certain and speedy death.

On a fair computation, three-fourths of the women who have been attacked with this disease have fallen sacrifices to it.

The morbid appearances observed on dissection are usually confined to the abdomen. The first thing that often presents itself is a collection of whey-like fluid in the cavity of the abdomen, which is sometimes so considerable in quantity as to amount to several quarts; and it has a peculiarity of smell different from any other fluid to be met with in the human body, either in health or disease. Where it is large in quantity, the surfaces of the different viscera and of the peritonæum will usually be found covered with a crust formed of a solid part of this matter, resembling coagulated lymph. If there be any interstices between the intestines or the other viscera, they are frequently filled with large masses of the same, adapted exactly to the shape and size of such interstices. In a few cases, a deposit of a caseous and serous nature has been discovered likewise in the head, breast, and external cellular membrane, as has before been observed. In most instances there is found a slight degree of inflammation in some part of the cavity; but it is not confined invariably to any particular place; as the uterus, ovaria, peritonæum, omentum, intestines, and bladder, have all in their turn been observed in a state of inflammation.

In many cases of dissection, a considerable quantity of purulent matter has been found in the cavity of the abdomen.

Upon analysing the fluid effused into the peritonæal cavity of a woman dying from this fever, it has been found to possess a perfect chemical identity with that furnished by the inflamed pleura. The peritonæal fluid, after depositing a copious whitish precipitate, which afforded albumen to the different re-agents, was of a clear yellowish-white colour, and had the property of turning green the syrup of violets. But the nature and proportion of the alkali endowing it with this property have not been ascertained. The flocculi which float in the abdominal serum of puerperal subjects have been regarded as a cheesy substance, formed of the coagulum of the milk; but this seems erroneous. Ammonia mixed with the substance in question scarcely acts upon it as a solvent, and evaporation develops in it all the characters of albumen.

In a disease where the symptoms come on with such violence, where the progress is so very rapid, and the event so generally fatal, every assistance should be afforded as soon as possible. Unfortunately, however, there has prevailed a great diversity of opinion among physicians relative to the remedies to be employed during its first stage, some advising copious bleeding, and others highly disapproving of its being ever adopted. Under such a contrariety of opinion, it will be best to pursue that plan which seems most congenial to the nature of the prevailing epidemic.

I shall consider puerperal fever as admitting of the same variety of treatment with other affections, in which an inflammatory dis-

position prevails on its first attack; but in which a typhoid and malignant tendency is to be observed after a continuance of one or two days.

During the first stage of puerperal fever (which should not be considered as extending beyond twenty-four or six and thirty hours from its attack), if the patient complains of abdominal pain and soreness, I am of opinion that we may advantageously resort to venesection, proportioning the quantity of blood that is drawn off to the habit of the patient and the violence of the symptoms. In strong, plethoric women, it should not be less than twenty ounces, nor ought it to exceed thirty; and care should be taken that the orifice is made large, so as to produce a decisive effect at once. — The blood should be drawn whilst the patient is in the erect position. (See Pleurisy.) A repetition of the bleeding ought in general to be avoided; but if judged indispensable, from the abdominal soreness and pain not being removed or materially alleviated within six hours, a smaller quantity, not exceeding twelve ounces, should be taken away after this interval. It is only during the first stage of puerperal fever, however, that blood-letting is advisable; this being usually marked by inflammatory symptoms; whereas characters highly typhoid become manifest during its second stage.

In a few instances of this fever, extreme debility (marked by great depression of strength and a small, feeble pulse), and a typhoid tendency may be apparent from its commencement. In these it would be improper to draw blood from the arm; but where there is much abdominal pain, with great soreness, the application of several leeches to the belly may be advisable. In some countries, the application of leeches to the vagina, or hæmorrhoidal veins, has been considered as the best mode of bleeding in this disease.

The propriety of administering purgatives in puerperal fever has admitted of as much doubt as that of venesection. Some physicians, observing that women who die of this fever are generally molested with a diarrhoea, have been induced to consider this symptom as of the most dangerous and fatal tendency, and which ought to be restrained by every possible means; whilst others, again, have regarded it rather as critical than symptomatical, and think it ought therefore to be moderately supported instead of being restrained. To procure stools where costiveness prevails, and remove putrid, feculent matter, it appears reasonable that we might employ purgative medicines at the commencement of the disease with advantage; and possibly a few grains of the submuriate of mercury, with a small quantity of rhubarb or jalap, followed up by two or three large spoonfuls of a solution of some neutral salt every hour or two, until copious evacuations are procured, will be most advisable. Where the disease is in an advanced stage, and the patient reduced in strength, dislodging the contents of the intestines by means of gentle laxatives, assisted by

aperient elysters, appears to be the best mode of procuring evacuations, which at this period of the disease are usually of a dark brown colour, resembling coffee-grounds, very copious, of the consistence of thick gruel, and with a fetid smell.

In my opinion, the most rational method of treating puerperal fever, but more particularly when attended by abdominal pain and soreness, is to abstract blood from a large orifice to a sufficient extent at the first onset of the disease, and then direct the attention to a free evacuation of the alimentary tube throughout the continuance of the disease, at first by purgatives, and towards the close by aperient medicines and laxative elysters.

A very interesting account of a puerperal fever which was epidemic at Aberdeen, published by Dr. Alexander Gordon, gives us to understand that not only purgatives are useful in this disease, but likewise bleeding. He tells us, that the disease was infectious; that it seemed to arise from the contagion that was carried by the accoucheur, or nurse, from one lying-in woman to another; and that it began with violent, unremitting pain of the abdomen on the day of delivery or the next, with shuddering, and a very quick pulse, often 140 in a minute. If he saw the patient within twelve or twenty-four hours of her seizure, he took away from sixteen to twenty-four ounces of blood, which was always sizzly. He then immediately gave a cathartic consisting of the submuriate of mercury and jalap. After this had operated, he prescribed an opiate at night, and so continued the purge and the opiate for several days.

He asserts, that almost all those whom he was permitted to treat in this manner early in the disease, recovered to the number of fifty, and that almost all the rest died; but that when two or three days were elapsed, the patients became too weak for this method, and the matter was already formed which destroyed them.

Dr. Armstrong is of opinion* that puerperal fever bears a close analogy to typhus complicated with inflammation of the abdomen, and thinks it ought to be arranged under three varieties, namely, the sporadic, the epidemic, and the chronic. He also is perfectly convinced that bleeding at the first onset of the disease, assisted by purgatives, are the main remedies to be depended upon under every form; and he adds, moreover, that it is not simple bleeding and purging in which he places his confidence, but in copious bleeding, immediately succeeded by copious purging, or rather in the powers of these two means simultaneously exerted on the disease at its onset. Mr. Hey, of Leeds†, is also an advocate for the same plan of treating this fever.

Dr. Collins, of Dublin, found the effects of general bloodletting

* See his *Illustrations of Typhus and other Febrile Diseases*; and his *Treatise on Puerperal Fever*.

† See *Treatise on the same*, by Mr. Hey.

to be so disastrous as to induce him altogether to relinquish it. His treatment consisted of free and repeated leeching of the abdomen, and the administration of full doses of calomel and ipecacuanha, three or four grains of each being given every two or three hours. He also, as does Dr. Copland, extols the use of turpentine with castor oil as an aperient.

Dr. Goode remarks, that he has never given mercury systematically in a number of cases; but what experience he had of it, was in its favour, "and all those whose gums were effected invariably recovered."

It often happens that nausea and vomiting of bilious matter attend an attack of this fever. In such cases we may recommend a gentle emetic of ipecacuanha to be taken, with a view of cleansing the stomach: but I cannot agree with those who advise a repetition of it, as the operation of vomiting never fails to aggravate the pain, and likewise to exhaust the woman, besides endangering a great degree of irritation in the stomach, to which there is naturally too great a tendency.

Although I object to a repetition of ipecacuanha or antimonials, given so as to produce an emetic effect, still I think they may be administered with some advantage at the commencement of puerperal fever, in such small doses as to determine to the surface of the body. As a diaphoretic, I know of none preferable in the present instance to ipecacuanha, which may be prescribed in doses of about two grains, to be repeated every three or four hours; or perhaps it may be still more efficacious to give it combined with opium, as in the *pulvis ipecacuanhæ compositus*. Of this, about six grains made into a bolus, with a small quantity of confection of roses, may be taken as before mentioned, washing it down with a saline draught; and to make the diaphoretic effect more certain, the patient should drink frequently of diluting liquors, such as whey, barley-water, &c.

To alleviate the soreness and distension of the abdomen, we may recommend the application of fomentations both inwardly and externally; inwardly, by injecting tepid water into the uterus every four or six hours, and administering emollient clysters from time to time; and externally, by applying flannel cloths wrung out in a warm decoction of equal parts of camomile-flowers and bruised poppy-heads, with an addition of about one-third of rectified spirit, over the whole region of the abdomen; and these ought to be renewed as often as they become cold, taking due care that they are not so wet as to run about the bed and incommode the patient.

The warm bath has been recommended by some practitioners, and it often produces a calm and disposes to sleep; but this being the effect of exhaustion, it appears to be a doubtful remedy.

Where the abdominal cavity is highly painful to the touch, and is occupied by extensive inflammation, the application of cold to

the parts, by cloths dipped in camphor mixture and cold water, has been attended with a good effect.*

If the soreness and pain are not relieved by the means which have been suggested, then the application of a blister to the upper part of each thigh may be proper. Blistering the abdomen might not be advisable, at least not until the topical abstraction of blood has been adopted by the application of several leeches.—See Peritonitis.

Having employed gentle cathartics at an early period for the purpose of obviating costiveness and dislodging the putrescent matter from the bowels, we may then with safety have recourse to anodynes, administered so as to keep up a constant effect.† The dose of opium must depend on the severity of the pain, and the age and constitution of the patient, and it may be repeated every four or six hours. Opium, when administered in puerperal fever, diminishes the irritability of the system, as well as that of the stomach and intestines. It eases pain, produces sleep, and seems to excite a moderate diaphoresis. In a few instances, I think, I have observed it to obviate or relieve delirium in the same manner as in typhus.

Should there be any great irritation of the stomach, the saline draught with a proper quantity of tinctura opii may be given, so as that the effervescence shall take place after it is swallowed, as advised under the head of Simple Fever. Should this medicine also be rejected, the vomiting may, perhaps, be restrained by opium in the form of pills, and by rubbing the region of the stomach frequently with some strong anodyne liniment. The application of a blister might excite injurious irritation. The strength is to be supported by administering elysters composed of animal broths and other such nutritive liquids, until the stomach becomes tranquil, and will bear the introduction of proper nourishment.

If a gentle purging arises in the first stage or commencement of the complaint, it ought not to be too hastily stopped, as the fever has in some instances been carried off by such a spontaneous evacuation; but if the disease is of some days' standing, the stools very frequent, the patient much reduced, and no evident relief has been afforded by the diarrhœa, we must then give astringents ‡,

* See Cases of Puerperal Fever, by T. Sutton, M.D.

† R_y Aq. Cinnam. f. ℥j.
Tinct. Opii, m xv.
Syr. Althææ, f. ℥ij.

Spirit. Lav. C. f. ℥ss. M.

ft. Haustus.

‡ R_y Confect. Opii, ℥ss.—℥j.

Aq. Cinnam. f. ℥jss.

Tinct. Kino, f. ℥ij.

† Take Cinnamon Water, one ounce.
Tincture of Opium, fifteen drops.
Syrup of Marshmallow, two drachms.
Compound Spirit of Lavender, half a drachm.
Mix them for a draught.

‡ Take Confection of Opium, ten grains to one scruple.
Cinnamon Water, one ounce and a half.
Tincture of Kino, two drachms.

joined with opium, to restrain it; and for ordinary drink she may take the *mistura cornu usti*. To support the strength, wine may be necessary; and this should be given in a moderate quantity, properly diluted with water, as likewise mixed with the food, consisting of preparations of barley, sago, panado, Indian arrow-root, tapioca, and the like, varied now and then by broths, beef-tea, and milk.

The *oleum terebinthinæ* is a medicine which is highly spoken of by one or two practitioners in this disease, but further experience is requisite to satisfy us that it is deserving of the character ascribed to it.

It has been observed, that this fever, after continuing a day or two, very often acquires a malignant and putrid tendency. Under such circumstances it will be right to have immediate recourse to the bark of *cinchona*, joined with the mineral acids, but more particularly the muriatic, as noticed under the head of Typhus Gravior, and to exhibit it freely in as large doses as the stomach will bear. If the powder is readily retained, it ought to be preferred to any other preparation; but if not, a decoction or infusion may be substituted.* Should it be rejected in all these ways, it may then be given in elysters, with an addition of about five and twenty drops of *tinctura opii* to each. If it occasions any purging when taken by the mouth, a few drops of the tincture of opium may be added to each dose.

When there is no disposition to a putrid tendency, it will be best to wait till a remission of the symptoms, or a partial subsidence of febrile action has taken place, before we prescribe a use of the *cinchona*.

A late physician of eminence †, in treating on this disease, observes, that the *cinchona*, although given by him in the different stages of the complaint with remissions tolerably distinct, by no means answered the intention as a febrifuge; but that in few

Spirit. Lav. C. f. 3ss. M.	Compound Spirit of Lavender, half a drachm.
Haustus ter in die sumendus.	Mix them. This draught to be taken three times a-day.
<i>Vel,</i>	<i>Or,</i>
R Mistur. Cretæ, f. ʒiij.	Take Chalk Mixture, three ounces.
Aq. Pimentæ,	Pimento Water,
— Cinnam. aa f. ʒij.	Cinnamon Water, of each two ounces.
Tinet. Catechu, j. ʒij.	Tincture of Catechu, two drachms.
— Opii, ʒxlvi. M.	— Opium, forty-five dps.
ft. Mistura, cujus sumat. cochl. larg. ij. quartis horis.	Mix them, and take two table-spoonsful every four hours.
* R Decoet. vel infusi Cinchonæ, f. 5x.	* Take Decoction or Infusion of Peruvian Bark, ten drachms.
Tinet. Cascaril. f. ʒij.	Tincture of Cascarilla, two drachms.
Acid. Muriatic. ʒxviii. M.	Muriatic Acid, eighteen drops.
ft. Haustus quartis horis adhibendus.	Mix them. This draught is to be given every four hours.

† Dr. Denman.

cases where the intermissions were complete, it had succeeded. He likewise observed, that, as a supporter of the general strength, it has been found of less service than might have been expected, on account of the disturbed and very irritable state of the bowels, which it has a tendency to increase. Instead of cinchona, he advises the calumba-root *, in powder or infusion †, in doses to be repeated every four hours.

If hiccups and subsultus tendinum arise in the progress of the disease, recourse must be had to antispasmodics, such as musk, æther, and the like; although it is probable they will avail but little. When any unusual coldness of the extremities is felt, the application of stimulating cataplasms will be proper.

The carbonate of potass is a medicine which is strongly recommended by Monsieur Guinot ‡ in puerperal fever, as well as in all diseases connected with the secretion of milk in the female breast. He advises it to be given in doses of from ten to twelve grains three times a day, in any proper vehicle, and to employ at the same time alkalies externally, such as a solution of soap in a decoction of poppy-heads, taking care at the same time not to neglect other remedies indicated by the circumstances and symptoms of the case.

This alkaline treatment he recommends under the idea that the disease is occasioned by the predominance of an acid. Whether it acts by counteracting the acid, dissolving the clotted milk, by neutralising the acid which may actually exist there, by its action on the organs of perspiration, or by inducing other useful crises, cannot be ascertained; but it appears to have proved very successful and advantageous with other practitioners besides Monsieur Guinot, and may, therefore, be tried at an early period of the disease. A combination of the carbonate of potass with the cinchona bark might probably be useful in cases of puerperal fever complicated with malignancy.

It would appear that the effluvia of a patient under puerperal fever is an animal poison sui generis, capable of acting on pregnant females, their situation giving the predisposition necessary for the operation of its influence. The usual mode of communicating the infection in private practice is, by being delivered by some accoucheur who has lately been attending a woman labouring under

* R^y Pulv. Calumb. ʒss.
Opii, gr. ss.
Confect. Rosæ, q. s. M.
ft. Bolus.

† R^y Infus. Calumb. f. ʒx.
Tinct. Cort. Aurant. f. ʒjss.

Acid. Muriatic. m̄xiv. M.
ft. Haustus.

‡ See Extracts from his Memoir inserted in the third volume of the Medical and Physical Journal, pages 80. 165. 264. and 363.

* Take Powder of Calumba, half a drachm.
Opium, half a grain.
Confection of Roses, a sufficiency
to form a bolus.

† Take Infusion of Calumba, ten drachms.
Tincture of Orange Peel, one
drachm and a half.
Muriatic Acid, fourteen drops.

Mix them for a draught.

puerperal fever, or her being visited by female friends who have been where it prevailed. It therefore behoves every practitioner, when he meets with the disease, to observe all possible precaution in changing his clothes, and by careful ablution of his hands, to guard against conveying infection to other parturient women: moreover, all pregnant women should be excluded from the house, nor should the nurse or other persons about the sick be permitted to go abroad and visit women in a state of pregnancy.

To prevent the disease from recurring, it will be proper to keep the patient's mind before, as well as during the time of labour and afterwards, as free from every kind of uneasiness as possible, as anxiety might greatly predispose to an attack of it. She should likewise carefully avoid any exposure to the infection of fever before delivery, as well as to the occasional causes of it afterwards. Every woman lately delivered ought cautiously to guard against cold; but in doing this her room should at the same time be kept of a proper temperature by allowing a sufficient ventilation.

It being a well-known fact that puerperal fever has been chiefly confined to close apartments and small hospitals, and that since the lying-in chambers have been made more airy and commodious, and the hospitals larger, the disease seldom prevails epidemically or becomes general, due attention should be paid to a free ventilation; for it is by no means improbable that a cool air in a lying-in chamber will frequently prevent, and its opposite be likely to induce, the phenomena of puerperal fever.

The patient should observe the strictest cleanliness both as to herself and the bedding. On the coming of the milk, her breasts ought to be drawn repeatedly throughout the course of the day by some person accustomed to the business, or by applying the child; her body should be kept perfectly open after she is delivered, as well as before her confinement, by some mild purgative medicine, and she should abstain from all food of a heating or irritating nature.

An upright posture will be most proper, in order to discharge more readily any putrescent matter that may be in the uterus.

When the disease prevails as an epidemic among puerperal women, or occurs in a lying-in hospital, all communication ought immediately to be cut off between those who are affected and such as have lately lain in, or expect shortly to do so; and in order to root out the disease and stifle contagion, we should have recourse to fumigations, as advised under the heads of Malignant Fever and Dysentery, and afterwards to painting, white-washing, and a free ventilation.

In situations where puerperal fever has been prevalent, some advantage may be obtained by giving a decoction of the bark of cinchona with tincture of opium and cordials immediately after delivery. These will in some measure enable lying-in women to resist the powers of contagion.

MANIA PUERPERARUM.

THE characteristics, symptoms, and treatment of madness arising in women after delivery, are fully detailed under the head of Insania, which see, vol. ii. p. 1.

INVERSIO UTERI.

THIS complaint consists in the inversion of the cavity of the uterus, so that the fundus comes through the os uteri, consequently that part which was formerly the inside of a cavity becomes now the outside of a tumour, either in or projecting from the vagina. It most commonly is the consequence of mismanagement of the placenta, by the midwife or accoucheur being in too great a hurry to extract it.

Its immediate effects are hæmorrhage, faintness, and a sense of fulness in the vagina.

When early discovered, the uterus may easily be reduced to its natural situation. If the placenta be adhering to the womb, the latter should be reduced before any separation of the former be attempted, to prevent hæmorrhage.

There exists also what may be termed a chronic inversion of the uterus, which comes on slowly and gradually in the unimpregnated state, and the female herself is not aware of anything unusual, until the uterus protrudes through the vulva. Some care is required to distinguish this disease from polypus.

It is irreducible, and incurable, except by the removal of the uterus by the ligature, and this operation has been successfully performed. These cases are, however, of extremely rare occurrence.

PROCIDENTIA UTERI.

THIS complaint consists (as the name implies) in a change of the situation of the womb, by which this organ falls much lower than it ought to do. In some cases it absolutely protrudes entirely without the vagina. The slighter cases are, therefore, named a bearing down, and the more violent ones a descent or falling down of the uterus. The complaint is met with in women of every rank and age: but more frequently in those who have had several children than in such as have not had any.

Every disease which induces general debility, or local weakness

in the passage leading to the womb in particular, may lay the foundation of this complaint; hence immoderate venery, frequent misœarriages, improper treatment during labour, and too early or a long-continued erect posture of the body soon after delivery, and in some cases after abortion, are in women the most common causes of procidentia uteri. At this time the womb weighs eight or ten times more than when unimpregnated, and descends by its gravity. In the unmarried it is apt to take place in consequence of violent exercise, such as jumping, dancing, riding, lifting heavy weights, &c., while out of order.

The proximate or immediate cause of prolapsus uteri is relaxation of the broad and round ligaments above, and a want of tone in the vagina below.

The disease comes on generally with an uneasy sensation in the loins whilst standing or walking, accompanied now and then with a kind of pressure and bearing down, as also pains in the groins extending to the labia. There is a sense of fulness in the parts, and probably an increased discharge of transparent mucus from the vagina. All the symptoms are relieved by a recumbent position. In procidentia uteri the symptoms arising from the uterogastric sympathy are in many cases very distressing; the appetite fails, the stomach and bowels lose their tone, flatulence and borborygmi are troublesome, considerable debility ensues, the spirits are depressed, employment and exercise become irksome, and life at last is scarcely desirable. The discharge varies much at times, the menstrual flow usually is increased, and menorrhagia not unfrequently attends. Before the external protrusion of the tumour the discharge is greater than afterwards, because the surface of the vagina ceases to secrete when permanently exposed to the air. After a time, patches of healthy-looking ulceration attack the exposed vaginal surface, but seldom go deep; and the os uteri is not unfrequently assailed by one of these.

By neglecting to pay proper attention to the early symptoms and threatenings of the disease, the woman becomes at length incapable of making water without first lying down or pushing up the swelling, which seems to impede the discharge of urine; and if the complaint continues to increase, the womb is actually forced out of the parts, and takes on the form of a bulky substance hanging down between the thighs. This severe degree of the disorder seldom occurs, however, among women in northern climates, except in those who have had many children, and are at the same time of a relaxed and feeble frame: but in warm climates it is very frequently to be met with, and particularly in negroes and mulattoes, among whom I often observed the protruded parts considerably ulcerated, occasioned, no doubt, by external irritation and a neglect of cleanliness.

Although procidentia uteri is a local disease, it is frequently productive of several distressing symptoms, which undermine the constitution. These principally arise from the disturbed functions

of the stomach and bowels, and an impaired condition of the nervous system.

In its early stages, if conception should take place, a confinement of some weeks in a recumbent position on a sofa or bed will often enable the parts to regain their tone, so as to render subsequent artificial assistance unnecessary. Where pregnancy does not exist, we must have recourse to art. If the disease is of long standing, it may be difficult to effect a cure.

In the treatment of procidentia uteri, the curative intentions are to increase the tone of the relaxed parts, both topically and through the constitution, and to support the tumour topically by cold and by astringents. Cold water ought to be applied to the parts of generation, as also to the belly and back, by means of a large sponge, three or four times a-day, the water being as cold as possible. Cold water may also be thrown into the vagina as frequently by means of a syringe. In very slight cases, these means, assisted by a horizontal position, may be sufficient; but in cases of some standing, astringent washes should be substituted for simple water. Alum combined with zinci sulphas dissolved in a decoction or infusion of some vegetable astringent, such as *thea viridis*, *petala rosæ rubræ*, *cortex quercûs*, *cortex granati*, *gallæ*, &c., will make an appropriate injection, various formulæ of which are given under the heads of *Leucorrhœa* and *Gonorrhœa*, as also below.*

In aid of topical applications tonics must be administered internally, especially the bitter kind, as *gentian*, *calumba*, &c., with *cinchona* and *sulphuric acid*: for various formulæ of these, see *Dyspepsia*.

A due attention must be paid at the same time to the state of the bowels, and this should be nicely regulated; the extreme of constipation and diarrhœa being equally injurious. Aperients of the mildest nature, when requisite, are, therefore, only to be employed. The bladder should never be suffered to contain a large quantity of urine. When the stomach is not previously much weakened, the use of a cold bath may prove a valuable auxiliary to the other means; and a salt-water bath will be preferable to one of fresh water.

In every case of procidentia uteri, the recumbent posture on a

* R Cort. Quere. f. ʒij.

Aq. Puræ, Oij.

Coque ad dimidium, et colaturæ adde

Aluminis, ʒjss.

Zinci Sulphat. ʒss. M.

ft. Injectio.

Vel,

R, Aluminis, ʒiv.

Plumbi Acet. ʒss.

Aq. Rosæ, f. ʒx. M.

ft. Injectio.

* Take Oak Bark, two ounces.

Pure Water, two pints

Boil it down to one pint, and to the strained liquor add

Alum, one drachm and a half.

Sulphate of Zinc, half a drachm.

Mix them for an injection.

Or,

Take Alum, four scruples.

Acetate of Lead, half a scruple.

Rose Water, ten ounces.

Mix them for an injection.

sofa or hard mattrass, as much as possible, ought to be enjoined, keeping the room at the same time as cool as may be consistent with the patient's feelings. The diet should be generous and nutritive, and a moderate quantity of wine be allowed. As exercise, swinging in a cot or hammoek, and riding in an easy carriage, will be most appropriate.

If the disease resists these remedies, or it shall appear from the first unnecessary to employ them from any idea of their inefficacy, the only relief that can then be afforded, unless the woman becomes pregnant, is to be obtained by wearing a pessary. This is usually made either of wood or ivory, and if properly adapted to the passage and of a fit construction, may be worn without much inconvenience or any pain. Whenever such an instrument is used, certain attentions will, however, be necessary. Thus, the pessary should never be allowed to remain in the passage above a few days at a time, otherwise it may become the source of some irritation. It ought, therefore, to be withdrawn occasionally on going to bed, be well cleaned, lest the secreted matter attached to it become acrimonious, and be re-introduced in the morning before the patient quits her bed.

Pessaries are always either circular or oval; the former can only be used where the disease has not made much progress, and when the tone of the vagina is not much impaired. It will seldom be safe to introduce a circular pessary the diameter of which exceeds two inches and a half; it should be large enough, however, to keep the situation in which it is placed, else it will slip away; but it should not be of such a size as to incommode the woman or to injure the parts by its pressure. Occasionally the pessary should be changed for one of a smaller size, as the vagina recovers its proper tone. The oval pessary rests with its longest diameter across the vagina, interfering neither with the rectum nor with the urinary passages. It seems best adapted for those cases in which the tone of the vagina is so much diminished as to require a large support. Its longest diameter ought not to exceed three inches and three quarters.* All pessaries ought to be introduced with great care, and be placed as high up in the vagina as possible.

Before any attempt is made in the reduction of prolapsus uteri, it will first be necessary to empty the bladder and rectum: this being done, let the patient be so placed as that the pelvis shall be much higher than the shoulders. The practitioner is then to apply his fingers and thumb to the lower part of the tumour where the os uteri is situated, and by a gentle and gradual pressure this is to be carried up into the centre of the tumour itself. The pressure is afterwards to be continued until the parts are returned into their proper place. A pessary is then to be introduced, and the patient to be enjoined to remain in a recumbent posture for several hours.

Where a woman who is liable to prolapsus uteri becomes preg-

* See Observations on the Diseases of Females, by Charles M. Clarke.

nant, there will be no occasion for the pessary after the third month, and by proper treatment after delivery, a return of the complaint may probably be prevented.

In married women, whilst there remains a possibility of pregnancy, the hope of a radical cure continues, because the processes which the vagina and parts connected with it are subjected to after parturition, often produces a permanent reduction of the tumour. In these cases the principal remedies, therefore, are pessaries. But the complaint frequently remains after the period of menstruation is over, and when all likelihood of a radical cure is done away. In cases of this nature, Dr. Hamilton, of Edinburgh, has attempted, by exciting artificial inflammation of the vagina, to procure an adhesion of its sides, and thus to form what he terms a fleshy pessary. Unhappily Dr. Hamilton failed in the experiment which he made for this purpose.

A powerful stimulant is certainly required to produce in the vagina and other canals lined with a mucous membrane, that kind of inflammation which forms coagulable lymph; for in these parts a slight degree of inflammation occasions pus to be poured forth, but a greater is demanded for the formation of lymph, exactly the contrary to what occurs in most other parts of the animal body. Mr. John Hunter says*, that he produced adhesive inflammation in the vagina of an ass, by injecting a strong solution of the oxy muriate of mercury. The remedy would by no means, however, be advisable in a woman.

DISEASES OF INFANTS.

MUCH attention and experience are required to treat the diseases of infants judiciously; close and repeated observation being the principal means of supplying the want of that kind of assistance which the personal information of adult patients generally affords. The disorders of early infancy are, however, more obvious than has been generally supposed; their number is comparatively small, their causes are uniform, and the treatment of most of them is simple and pretty certain.

Improper food, confined and unwholesome air, the want of due exercise and cleanliness, difficult dentition, and unhealthiness of the parents, are the most general causes of the diseases of infants. Others have, indeed, been enumerated both by ancient and modern writers, such as their general laxity, the greater irritability of their

* See his Treatise on the Blood, p. 240.

nervous system, and the delicacy of their muscular fibres, which may, indeed, be considered as so many predisposing causes.

The symptoms of the first diseases of infants (by which we also judge of their nature) are chiefly sour belchings, vomiting, purging, inquietude, crying, wakefulness, heaviness, loathing of the food, contractions and sharpness of the features, blueness about the mouth, turning up of the eyes, sudden startings from sleep, thirst, heat, disorder of breathing, inability to cry or suck continuously, retraction of the fingers, toes, or extremities, hardness and distension of the belly, and pustules or eruptions, external or internal. To these may be added the openness or firmness of the fontanelles and of the sutures, the strength and figure of the bones, and the relaxation or contraction of the skin in general, and of the scrotum in particular. The pulse and urine are less certain marks, in the greater number of their complaints, than they are in older children and adults.

Having thus briefly noticed the causes and symptoms of infantile diseases in general, I shall proceed to consider each separately. Small-pox, chicken-pox, measles, scarlatina, and such other eruptive diseases, together with croup, hydrocephalus, ophthalmia, whooping-cough, scrofula, rickets, tinea capitis, worms, and a great many other diseases, being equally liable to attack children of a maturer age, have already been noticed in the preceding pages of this work, in the class and order to which each belongs. — See the Index and Systematic Arrangement.

As it is always more desirable, as far as we are able, to prevent diseases than to cure them, and to obviate the causes rather than to remove their effects, I beg leave, before entering on the treatment of infantile diseases, to offer a few observations on the diet and proper management of young children.

During the first months of a child's life, the milk of its mother is, unquestionably, preferable to every other kind of nourishment, and even to the milk of another woman, provided the parent is in good health, and labours under no malformation of the nipples, or constitutional imperfection of importance. It will perhaps abate the frequency with which mothers, on the ground of fancied weakness, or rather indisposition, abandon their infants to the care of others, if we adduce, from Dr. West's Lectures on the Diseases of Children, the results of statistical observations on this subject. That the substitution of a stranger's for a mother's care "is very influential in producing a high rate of mortality among infants appears from the fact mentioned by M. Benoiston de Chateauneuf, that while among children suckled by their mothers only 18·36 per cent. die within a year after their birth, 29 per cent. of those put out to wet nurse die during the same period." (p. 331.)

Where the child is not only deprived of a mother's care, but also suffers the loss of its natural food, the consequences are still more unfortunate. Thus, according to M. Villermé, at the Foundling Hospital of Lyons, where each infant is given into the charge of a wet nurse, first for a day or two in the town, and afterwards

in the country, the mortality is 33·7 per cent. At Rheims, where it is as speedily removed into the country, but is not brought up at the breast, the mortality is, during the first year, 63·9 per cent.; while at Paris, where a mixed system is pursued, the intermediate mortality of 50·3 is observed.

M. Gaillard again remarks, that at Parthenay, in the department of Deux-Sevres, of 153 foundlings, 54 died between the ages of one day and twelve months, or 35 per cent., which is a higher proportion than that presented at Poitiers. At X—, of 244 new-born infants, 197, or 80 per cent., had died by the end of the first year. He ascertained that in this hospice as much attention is paid to the children, and the nurses are under as strict oversight as at Poitiers and Parthenay. But at X— none of the children are suckled, but all are fed. The officers of the hospice have tried all means to remedy this evil, but neither their own efforts, nor those of some most excellent female assistants have been of the slightest service.*

From the above extracts it results, that the chance of death during the first year to a child brought up by hand is at least twice as great as to one that has a mother's nursing; what later prejudicial effects are manifested in the few of those thus artificially brought up who escape the perils of this first period it is not easy to ascertain, but it is probable that they are not inconsiderable. The nurture under which so many sink exhausted into the grave cannot but mar normal development and robust growth in the remainder.

As, however, cases will occur in which, on account of malformation in the mother's breasts, of her serious illness, or removal by death, she may be in part or wholly prevented from supplying in the natural way the wants of her infant, it becomes expedient to consider what food may most advantageously be substituted for that of which the child is unavoidably deprived. It is manifest, from what has preceded, that recourse to a wet nurse is the most efficient expedient for securing the welfare of the child, but this is often excluded by the circumstances of the case; and there is besides, as pointed out long ago by Dr. J. Clark, and again by Dr. West, this moral objection to such a course, that it often only changes the subject of the evil, the nurse's own infant being the sufferer by her devotion to her foster-child. Its mother's milk being the fittest food for the infant, it seems a natural conclusion that that artificial food which approaches it most nearly in chemical composition will be the most proper substitute. And this consideration at once excludes, as principle ingredients in such food, all the vegetable starches and farinaceous matters, which are too much in favour with the majority of nurses, and leads us to seek among animal products, and more especially among the milks of different domestic animals, the means of supplying what we want; now the milk of the cow is much more readily available than any other for

* Lectures, pp. 331, 332.

our use, and an investigation of the differences which exist in it as compared with human milk enable us to adopt it to our purpose. If we take the table of the several constituents of human milk and that of cows, as furnished by Dr. West, we shall find that in 1000 parts of the latter the solids amount to 138, whereas they only reach 116 in the former: that 63. 44. 38. and 9. represent very nearly the respective quantities of the casein, butter, sugar, and salts in 1000 parts of cows' milk, while 36. 26. 50. and 2. indicate the quantities of the same principles contained in 1000 parts of human milk. Dilution with water will, therefore, serve to assimilate the cow's milk to that of woman as far as the quantities of three of the ingredients are concerned, while sugar should be added to make up the deficiency in that principle. The degree of dilution must, says Dr. West, vary according to the infant's age; at first the milk may be mixed with an equal quantity of water, but as the child grows older the proportion of water may be reduced to one-third. As cows' milk (especially that of stall-fed cows) has a far greater tendency to acidity than human milk, which is persistently alkaline, this fault may be corrected by the occasional addition of a little lime-water or carbonate of magnesia, according to the state of the child's bowels, the former being useful where they appear irritable, the latter when they are somewhat constipated. Dr. J. Clark, in his Commentaries on the Diseases of Children, objects to the use of cows' milk, on the ground that it is apt to form a firm and indigestible curd, and that this inconvenience is not entirely prevented by dilution with water. He prefers, therefore, where asses' milk cannot be procured, to mix cows' milk, previously skimmed, with two-thirds or three-fourths of its measure of gruel made from pearl-barley, groats, rice, or arrow-root, increasing the proportion of milk as the child advances in age.

Our artificial mixtures probably never attain so exact a resemblance to the food provided by nature as to have the same chance of agreeing, so that we must be prepared with modifications of our method to meet the exigencies of the case: accordingly, the author just quoted tells us, where this food does not agree with the child, weak mutton, chicken, or beef broth, clear and free from fat, mixed with an equal measure of any of the mucilaginous or farinaceous decoctions above mentioned may be tried. The food, when given to the child, should be raised to a temperature of about 90°. It should be thin and liquid, and be made fresh every day. It is to be offered to the infant frequently, by little at a time, and at proper intervals, and not to be crammed down its throat as often as it awakes from sleep, or cries, as is the custom with many nurses. Instead of a spoon, a horn or glass bottle covered with parchment, and this perforated so as to imitate a nipple, may be used. This gives occasion to some little exertion in sucking, imitative of what we see in nature, and is moreover attended with the advantage, that the infant will not be gorged or induced to take more than it really wants.

It is a point much insisted on by Dr. West, that even when the mother despairs of rearing her child entirely at the breast, she should yet suckle it immediately after birth, if it is only for a few days or weeks, the extreme susceptibility of the infant and the peculiar properties of the maternal milk rendering artificial feeding at this time especially hazardous. At a later period, to us, though the secretion of milk be deficient in quantity, if it retain its healthy qualities, it will still be her duty to contribute as far as practicable to its support. In such a case the child must, of necessity, be in part supported on unnatural food; but we strongly protest against the too common practice of early feeding, even where the mother is robust and healthy and the milk abundant. The mother's milk, according to Dr. West, is not only merely suitable for the infant soon after birth, but it continues to be the aliment most proper for it for many months; the casein increasing in quantity as the infant grows older, and the demands for materials to maintain its growth increases. What need, then, for interference where the natural provision is so perfect. As a general rule, feeding should be deferred till teething has commenced, the epoch marked by nature for a gradual change in the sources of the child's alimentation. If the mother be a good nurse (write Drs. Evanson and Maunsell, p. 41.), she should be able to support her infant, independently of any other instrument, during at least two-thirds of the period of infancy — that is to say, till the sixth or seventh month.

If teething commences soon and goes on well, the infant may be weaned at about nine months old; but if dentition is late, or accompanied with much irritation, it may continue at the breast for a whole year, provided the health of the mother will admit of it, or that she is not again pregnant. When the child is weaned, any kind of light, plain animal food may be allowed it once a-day, with a due proportion of vegetables, consisting principally of the *farinaacea*, as flour, rice, sago, &c.

From a mistaken expectation of strengthening weakly children, some people give them animal food twice or thrice a-day; but this is injudicious. The most proper drink for children will be plain water.

The practice of swathing infants with bandages is now judiciously laid aside; and deformity, as a consequence of dressing or clothing children improperly, is rarely to be met with. The rule to be observed with respect to the article of dress, ought to be, that a child have no more clothes than are necessary to keep it warm; that they sit easy and loose on its body, being secured with tapes instead of pins; and that they be changed frequently, especially when they happen to be wetted. Dirty clothes not only gall and fret the tender skin of infants, but likewise give them an unpleasant smell, and are apt to produce cutaneous disorders, if not vermin; whereas cleanliness, assisted by gentle friction with the hand over every part of the body morning and night, together with proper ablutions with tepid or even cold water, tends greatly to preserve the health of children, and promotes perspiration.

In dressing the infant, if the nurse observes the skin any where chafed, after washing the parts and drying them well, let her apply a little common hair-powder to it by means of a puff; but if much galled, which will sometimes happen at the time of teething, particularly in very fat children, from the heat and sharpness of the urine, let her bathe them with a wash composed of two parts of common water and one of rectified spirit, and afterwards sprinkle them with a little calamine or Fuller's earth, powdered very fine. When cutaneous eruptions appear during dentition, no repellent application should be employed.

A young child should be amused through the day, and not suffered to sleep much during that time, that it may get the more rest by night. The curtains of its bed should not be drawn closely round, that it may breathe free and easily. It should be early accustomed to be much in the open air, for vigour of the body conduces to that of the mind; and as it is incapable of any exercise of itself, it should be the business of its nurse or other attendant to toss it well about in her arms from time to time. If the season of the year will admit of it, bathing the child frequently in cold water will very much tend to strengthen and invigorate it.

The chamber which is appropriated for the nursery should be roomy, and it ought to be kept remarkably clean, sweet, and properly ventilated.

ASPHYXIA.

WHENEVER a child does not attempt to breathe soon after it is born we should ascertain whether it is really dead, or animation is only suspended, by placing the hand over the region of the heart, when if the least tremulous pulsation be observed, it is an indication that the child may be saved.

The apparent cessation of life in new-born infants may be owing to various causes, such as original weakness, or that induced by loss of blood sustained by the mother, pressure on the head of the child, or on the funis umbilicalis during labour; the last, according to Dr. Ramsbotham, more frequently producing it than any of the others. Impediments, also, to inspiration may exist in the form of mucus or membrane obstructing the passage of air through the mouth or throat, or in that of congestion of blood in the lungs, arising either from the neck of the child being tightly encircled by the os uteri or navel-string, or from the head being long detained in the passage. When universal weakness of the vital powers seems to be the cause of asphyxia, we must be cautious not to suffer any effusion of blood from the umbilical cord. The communication between the child and the mother should be kept up as long as possible; for which reason we should avoid any violent

pullings at the cord, that the placenta may not be too soon detached; and we should likewise not be in a hurry to apply a ligature.

It not unfrequently happens, after a tedious labour, or where a portion of the funis has protruded through the os uteri during labour, so as completely to interrupt the circulation through the cord, that the child is so weak and faint, when born, as to show little or no signs of life. In such cases, after cleansing it and wrapping it in flannel, we should stimulate its temples and nostrils with spirits of hartshorn, and rub its chest with brandy. If these means fail to excite the languid circulation, the medical attendant should breathe gently into the mouth of the infant through a piece of silk or muslin placed, for the sake of cleanliness, between its lips and his own, closing its nostrils at the same time and making gentle pressure on the region of the stomach in order to direct the current of air into the lungs. When he has thus distended the chest, he should compress it with his hand so as again to empty it; and this alternate filling and emptying, this artificial respiration should be perseveringly and carefully continued till either the heart has ceased to pulsate, or the commencement of natural respiration is indicated by a sneeze or deep sigh. This mode of inflation of the lungs is to be preferred to that sometimes recommended of blowing through a curved pipe or catheter introduced through the mouth into the windpipe. The warm air from the mouth of the operator is more suited for admission into the lungs of the infant than that of the surrounding atmosphere would be, and the danger of producing mischief by undue haste or force in introducing it is less when the mouth rather than bellows or a syringe is employed for its propulsion.

The warm bath is another expedient for calling into play the action of the respiratory muscles; this is to be employed at the temperature of 98° or 100° Fahr., but it is by a sudden, not by a gradual influence, that benefit is to be derived from it. Let the child be immersed in a bath at this temperature, the means of procuring of which should, in all cases of protracted labour, be prepared for such an emergency; and, if the desired effect be not produced within five minutes at the utmost, let it be at once withdrawn, wrapped in dry warm flannels, and subjected to other attempts at awakening its dormant vitality, among which, inflation of the lungs is the most promising. Under all circumstances, the feeble power of generating heat possessed by the new-born infant should be borne in mind, and care be taken to maintain its warmth by appropriate means.

Stimulating the intercostal muscles to contraction, by sprinkling a little cold water on the child's throat, so that air may rush in by the glottis, may likewise be tried.

If the mouth be obstructed by mucus or other matters, these should be removed with a roll of soft rag, or by the finger, and we may at the same time either tickle the fauces or irritate the glottis

by letting a drop or two of spirit fall upon it from the tip of the finger.

If a congestion of blood in the lungs, from the causes before mentioned, has occasioned the suspension of life, the most proper step to be pursued will be, to suffer a small quantity of blood to be lost from the end of the divided cord.

The same will be advisable after a tedious labour, where there is much stupor present, in order to lessen the determination of blood to the head; in which case, the child may frequently be roused from its lethargic state by two or three smart slaps on the buttocks, back, and chest; when a sob will be drawn that will end in a cry, and respiration be established.

It is useless, write Drs. Evanson and Maunsell, to speak of the employment of tobacco fumes, electricity, or enemata, as recommended by some writers in the treatment of still-born children; for the two latter there is no time, and the former is now deservedly expunged from the list of means of restoring suspended animation.

The minor means suited to various circumstances have been described above; it is fitting that these should first be tried, and should they fail of success, artificial respiration will in all cases be the last, but not the least trustworthy of our resources, and deserve our persevering efforts.

Professional men being often called upon to give evidence before a court of judicature in cases of supposed infanticide, it seems right to mention, that much careful observation is required to discriminate between a child that is still-born, and one that has lived only a short space of time after its birth. Various appearances also, both internal and external, may be mistaken for marks of violent death. Even the swimming of the lungs in water, a test on which much reliance has been placed, is on many occasions found to be fallacious; for they will float in consequence of a putrefactive process having commenced, as well as when filled with air by respiration. The sinking of the lungs, however, shows that the child has never breathed.

A woman suffering the pains of labour, may have the fœtus escape from her and fall to the ground on its head whilst she is resting on her knees and elbows, or standing on her feet, so as that the child may be destroyed unintentionally. It should also be understood, that an infant, even at the full time of utero-gestation, may escape from a woman into a privy, or any such-like place, during her exertions to evacuate the contents of the intestines, and this may happen without her intending to destroy it. Such cases, beyond doubt, do sometimes occur.

It may likewise happen, that an unmarried woman, on coming to her full time, and having concealed her condition, may be taken ill when by herself, and be delivered of a live child; but that, either from syncope ensuing speedily, or her being suddenly deprived of reason from a distracted state of mind, owing to a sense of the

shame which will attach to her, she may be so overcome as to be rendered incapable of assisting the infant, whereby it may suffer suffocation under the bed-clothes, or be otherwise so injured as only to make a few inspirations. In other instances it may happen, that although the child is born alive, still, from its universal weakness, the want of due assistance, the circulation of blood between the mother and child being interrupted, either from undue pressure in its passage, or the umbilical cord being twisted round its neck in various convolutions, so as to produce congestion in some organ important to life, or from hæmorrhage from the umbilical cord, when no ligature has been applied to it, or from some other cause, it may soon cease to breathe, without receiving any intentional injury from its mother. No doubt, occurrences of this nature do sometimes take place; and they clearly point out the impropriety of placing any reliance on the floating of the lungs in water, as a proof of infanticide.

The floating of the lungs of a new-born infant, where no putridity exists, incontestably proves that it has breathed; but, although this is the case, the inference that the mother has *intentionally* destroyed it, is by no means satisfactory or clear.

CEREBRAL HÆMORRHAGE.

WE have already mentioned that, during the progress of its birth, the head of the child may undergo pressure, so as to interfere with the onward course of the blood, and to cause such congestion of the brain, as is unfavourable to its resuscitation and to the establishment of respiration. Under these circumstances, it has been advised, and we think judiciously, to allow of the escape of a little blood before tying the umbilical cord, in order to relieve the loaded vessels; and to resort to the other means available for exciting the functions of the lungs and heart in still-born infants.

In some cases, however, the causes of congestion are followed by still more formidable consequences of effusion of blood from the cerebral capillaries; and here our best efforts will fail of success. Sometimes it will happen that no progress is made towards restoration, and sometimes, after breathing imperfectly for a few hours, the child will die, and then blood will be found in the cavity of the arachnoid, sometimes limited to the neighbourhood of the cerebellum, at others covering a considerable part of the convexity of the brain, and even extending into the spinal canal.

It is a much more fortunate event when the congested vessels of the head unload themselves by hæmorrhage on the external surface of the skull. This occasionally happens, producing a tumor, which has received a Greek name, viz., cephalhæmatoma. This tumor makes its appearance within forty-eight hours after

birth on one of the parietal bones, most frequently on the right, as a circumscribed, soft, elastic, slightly fluctuating, painless swelling, the unchanged integument small at first, but gradually increasing for several days, and then for the most part being slowly absorbed so as to disappear in a month or six weeks or more. A circumstance characteristic of this swelling is, that there is a rim at its base of firmer consistence than the more central parts, so as to convey the impression of the parietes of the skull being deficient, and of the ridge being the edge of a hole in the bone. Sometimes the tumor is not simply absorbed, but some deposition of bone occurs, both in the site of the rim, and even within it.

It seems that these tumors require little interference; pressure is to be avoided during their period of increase, if much tendency exists to congestion of the brain; and a single evaporating lotion will suffice. After they have ceased to enlarge strips of plaster may be applied over them, so as to produce gentle compression. If no diminution takes place after this has been continued for four or five days, a small puncture may be made so as to let out the blood, and a bread and water poultice applied for a day or two. This affection is rarely attended with danger, and requires little treatment; but there is a possibility of internal being superadded to external hæmorrhage, and causing sudden apoplexy and death.*

ATELECTASIS, OR IMPERFECT EXPANSION OF THE LUNGS.

THIS disease, which by previous writers had been considered a peculiar form of pneumonia, and characterised by the epithet lobular, was first recognised in its true nature by Dr. Edward Jörg, who attached to it the name given above, derived from the two Greek words ἀτελής, imperfect or incomplete, and ἔκτασις, extension or expansion.

It appears that children which are very feeble at birth, and more especially those which are still-born and afterwards resuscitated, are very liable to suffer from this complaint, which consists in a part only of the lungs being engaged in respiration, while portions constituting a more or less considerable part of the whole remain in the contracted state in which they had existed prior to birth.

It presents itself, according to Dr. West, under two different circumstances.

1st. As a congenital condition: a more or less considerable portion of the lining never having become penetrated by air, but having remained in the foetal state.

2nd. As an acquired condition: portions of the lung which once

* West, Lecture IV.

were freely traversed by air ceasing to admit it; and this not from alteration of structure, but from a simple collapse of the pulmonary tissue.

Children labouring under the first variety of this affection are remarkable for general feebleness, for the weakness and small extent of the respiratory movements, which are scarcely or not at all perceptible in the chest, for their weak whimpering cry, and their little ability to suck. There are besides, loss of the natural warmth, pallor of the skin, and more or less lividity of the lips. Convulsive movements affect the muscles of the face, and at a later period, those of the extremities also, and return with increasing frequency, while the other symptoms increase, respiration becoming accompanied by a slight rattle or an occasional cough. The condition is not uniform, a sudden movement may bring on the convulsive seizures, accompanied by increased dyspnoea, or these paroxysms may supervene while the infant remains at rest. Such attacks may many times pass off, and the child return to its previous, or almost to its previous condition, but they return again and again till, after a few days or weeks, the infant dies.

In other cases, probably, where the affected portion of the lung is less considerable, the convulsive twitchings and attacks of suffocative dyspnoea are absent, but the child is feeble, and sucks with difficulty, its breath is short, and it has an occasional cough. The flesh wastes, the bowels become affected with an intractable diarrhoea, and it dies exhausted and extremely emaciated.

The termination, however, is not always thus unfortunate, and in the less severe cases, which are early subjected to appropriate treatment, we may hope gradually to correct the faulty condition of the lung, to obtain a progressive improvement in the symptoms, and to effect complete recovery.

No febrile action accompanies atelectasis, such as attends phthisis and pneumonia, and in the first of these, auscultation recognises in general only feeble respiratory murmurs, not the superadded sounds which accompany the others.

The appearances found in the dead body consist in patches of the lung of a dark red colour, depressed below the general tissue, solid to the touch, not crepitating under the finger, and sinking in water if detached from the rest. Air blown into a lung, some portion of which has this appearance, will cause the pulmonary vesicles to become distended, and the solid lobules to rise to the level of the rest of the lung, and to acquire the same colour and consistence as the rest, but they collapse again on the escape of the air.

The force required thus to distend the collapsed portion of the lung is very variable, sometimes it requires all that can be exerted, and its continuance for some minutes; and sometimes when the child has lived several weeks, even this will have no effect. The situations in which this condition of lung are most frequent are the lower edge of the upper lobes, the middle lobe of the right

lung, and the posterior part and lower edge of the lower lobes, and inflation succeeds less easily with patches in these than in other parts of the lung.

A remarkable peculiarity of this disease is, that it does not attack a large track of lung, or the whole of a lobe at one time, but isolated lobules or clusters of lobules form the patches just described, of which the boundaries are exactly defined, there being no gradation of colour or consistence. Such lobules are, according to Hasse, quite passive in relation to other morbid processes, and especially to inflammation.

In infants dead of ateleetasis, the foramen ovale of the heart is invariably unelosed, and the brain congested. Those that die shortly after birth have their bodies well developed, but extensively ecchymosed. In the protracted cases the body has been wasted, and the skin loose and wrinkled.

Treatment.—A careful maintenance of the temperature of the body by keeping the patient in a room heated to 70° Fahrenheit, or even higher; the frequent use of the hot-bath, rendered more stimulating by the addition of a little mustard; the employment of stimulating liniments to the back and chest; and the administration of cordial medicines, in the first instance to excite the feeble respiratory movements, and subsequently of tonics to invigorate the system, are the means recommended by Dr. West, whom we have followed throughout the preceding sketch. Besides these means, to the less enfeebled, a gentle emetic of ipecacuanha may be given daily with the view, not only of expelling any accumulated mucus, but of expanding the lungs more fully during the deep inspirations consequent on vomiting. As liniments, soap or camphor liniment, diluted, if necessary, with a little oil, should be rubbed on the back and chest twice or oftener in the day. The spiritus ammoniæ aromaticus, the spiritus ammoniæ succinatus, or sulphuric ether, to the extent of two or three minims, in two teaspoonfuls of milk, may be given thrice a day; or a grain of the sesquicarbonate of ammonia may at times be substituted in the same vehicle, or in sweetened mucilage. Extract of bark, given also in sweetened milk, is the tonic recommended by the author named above, of which two or three grains would be the commencing dose. The ammonio-tartrate, and the ammonio-citrate of iron in doses of two or three grains, or a grain of the citrate of iron and quinine would be found useful as occasional substitutes. Minute doses, as one or two grains, of hydrargyrum cum cretâ, will serve to regulate the bowels if a soap suppository be found insufficient. The diet should consist of the mother's milk, to be given in a spoon where the child is unable to suck sufficiently without such efforts as are exhausting.

The second variety of ateleetasis, or that state of collapse of the vesicles of the lung which may affect portions previously engaged in respiration, appears to come on as a consequence of an induced state of general debility, or of some obstruction to the admission of the air.

The result is the same if the obstacle be increased, as if the power be diminished, and hence the supervention of this state of lung becomes one of the most perilous, while it is one of the most frequent complications of infantile bronchitis. A peculiarity which may guide us in inferring the existence of such a state is, the rapidity of the changes that take place in the physical condition of the lung, for where air is heard entering freely on one day none may be perceptible in the next, while that part of the chest yields a sound of complete dulness; while sometimes, but less frequently, dulness is succeeded as quickly by resonance on percussion, and respiration becomes distinct where it was recently inaudible.

There are no differences to be remarked in the portions of the lung affected with this form of disease, as compared with those observed in the former variety: the other appearances must vary with the circumstances or complications which coexist with it.

The recognition of this condition should cause our treatment to approximate more or less nearly to that which has been pointed out as suitable to the first form. It should exclude altogether, or cause a very cautious and sparing resort to depletory measures for subduing any inflammation that may coexist, and leaves us emetics of ipecacuanha, stimulant expectorants of senega and ammonia, and external rubefacients, as the best means of meeting the complex exigencies of the case.

THE BLACK OR LIVID COLOUR OF INFANTS.

It sometimes happens, that immediately after birth the face and neck of the infant put on a livid or black appearance, the lips become purple, and the breathing short; which symptoms either go off soon again, or terminate in death.

They are to be attributed either to an imperfect closure of the foramen ovale, or some malformation of the heart or lungs; or to the vessels having imperfectly undergone those changes which are necessary for all animals who breathe common air.

The facts and reasonings of modern pathology, indicate, first, that free communication between the right and left sides of the heart is not necessarily accompanied with any considerable admixture of the venous with the arterial current of blood; and, secondly, that this admixture may, under peculiar circumstances, be large in amount, without giving rise to an aggravated form of cyanosis. Some other explanation of the phenomena was to be sought for, and we give the result in the words of Dr. Hassé:—

“Kneying was the first to form a correct view of the subject, and Louis has subsequently demonstrated that the cyanotic tinge

results from impeded flow of the venous blood back to the heart, or from thence to the lungs; any obstacle to the entrance of the blood into the right ventricle, or to its escape thence into the pulmonary artery, being of course in a high degree propitious to such stagnation." Two cases published by Dr. Peacock, in the 30th and 31st vols. of the *Medico-Chirurgical Trans.*, illustrate and support these statements.

Thus, in the first of these, so long as there was only moderate obstruction to the course of the blood through the contracted pulmonary artery, the cyanosis was slight in degree, notwithstanding the free intermixture of the venous with the arterial blood in the aorta, which issued equally from the right and left ventricle. In the second, on the contrary, lividity of the face and extremities existed in a very marked degree, though the venous blood did not enter at all into the systemic vessels, the only possible effect of the peculiar malformation of the heart being the production of constant congestion of the venous system.

Treatment. — Art is of little avail in this malady. It should be the object of those who watch over any sufferer from it, to protect him from all agents which are found to aggravate his condition. Hence he should be kept in a mild or warm atmosphere, be well clothed, restrained from all strong exertion, defended as far as may be from all sudden and strong emotions, and nourished by good but not too stimulating food. Experience countenances a mild tonic plan as that to be generally pursued, and the use of stimulants and antispasmodics for the relief of occasional paroxysms. Depletion by blood-letting is ill-borne, and we have known a case in which the mildest purgative, even castor oil, produced great disturbance. Hence, even where some inflammation, as pneumonia, complicates the affection, antiphlogistic means must be cautiously resorted to. Any access of catarrh or bronchitis will increase the difficulty of breathing, and some relief of this complication will be promoted by moderate doses of vinegar of squills in any suitable vehicle, or by half a grain or a grain of ipecacuan, with about ten minims of spirit of nitric ether, and three grains of nitre, in sugar and water thrice a-day. We have made trial of the latter under these circumstances, with some apparent benefit.

Stimulant pediluvia, and stimulant liniments to the chest and body, are means not to be neglected on the occurrence of severe paroxysms. In the former edition of this work was an account of the recovery, from impending dissolution, of two children, thus livid and breathless at birth, under the care of Dr. Hosack, and we give the description, a little curtailed, for the benefit of those who may be willing to adopt a similar plan:—

He directed four ounces of cinchona bark in powder to be boiled for a few minutes, in about two gallons of water; to this, when fit for use, a pint of Jamaica spirit was added. When it was cooled to a temperature rather above that of the body, the child was immersed in it up to its neck, and to render the bath

more stimulating, a small quantity of the diluted solution of ammonia was added from time to time.

A very apparent and favourable change took place in a short time; respiration was perfectly restored while the child remained in the bath; the circulation became vigorous and active, the countenance resumed its lively hue, the power of swallowing (which had been lost) was restored, and in every respect the child manifested symptoms of relief. It was now removed from the bath, wrapped up in warm, dry flannels, and put to the breast. This it took with eagerness, and it remained composed and free from complaints for about half an hour, at which time a fresh paroxysm came on. The bath was employed a second time, and repeated during one or two other paroxysms, with the same relief as before. These, however, were of shorter duration, and returned after long intervals. The child at length recovered, and was restored to perfect health. A like treatment was successful in the second, severer case.

A RETENTION OF THE MECONIUM.

A DARK-COLOURED viscid matter, known by the name of meconium, is contained in the bowels of all infants at their birth, and is usually discharged during the first two or three days, in consequence of the milk of the mother which is first secreted being somewhat of an aperient nature.

In general this will be sufficient to bring off the meconium; but where it fails to do so in the course of a day or so, the aid of medicine may be necessary, and the best we can employ is about half a drachm of the oleum of ricini. Some give a solution of manna in water, or equal parts of oil almonds and syrup. If these do not act readily, a clyster of thin gruel, with a little olive oil and common salt, may be thrown up into the intestines.

The custom of drenching children with some drug or other the moment they are born, whether requisite or not, with the view of carrying off the meconium, is highly reprehensible; for, in most cases, the milk of the mother will of itself be amply sufficient.

THE YELLOW GUM, OR ICTERUS INFANTUM.

THIS is a species of jaundice which affects many children at or soon after their birth, and which usually continues for some days.

It has generally been supposed to arise from an obstruction of the biliary ducts forcing the bile back upon the liver, from the

meconium impacted in the intestines, or from mucus or viscid matter clogging the ductus communis.

This jaundice (according to Drs. Evanson and Maunsell) in ordinary cases, appears to depend upon the active commencement of the secretion of bile, more being formed than is required for the uses of the digestive functions, and then disposed of by means of the skin and other secreting organs. In opposition to this view, however, Dr. West urges the fact that jaundice does not attack perfectly healthy children, but the immature and feeble, and those that have been exposed to cold. Hence he argues, that it is not due to any cause principally seated in the liver, but rather to the defective respiration and impaired performance of the functions of the skin, of which the hepatic disorder and consequent jaundice are but effects.

For the most part the disease is easily removed by clearing the intestines by some mild laxative, such as the oleum ricini, where the mother's milk does not of itself prove sufficiently aperient. Exposure to cold is at the same time to be avoided, and advantage may be expected from daily ablutions in warm water.

Where jaundice depends on congenital absence of the hepatic duct, or other important malformation, the disease is necessarily fatal; but these cases are very rare.

The disease, in some instances, has been supposed to proceed from a viscid matter obstructing the gall-ducts. In these it may be necessary to give a gentle emetic, consisting of a few drops of the tartarized solution of antimony, and on the succeeding day we may administer four or five grains of rhubarb. Should the yellowness continue after these means have been adopted, the emetic as well as the opening medicine may be repeated in the course of a few days. Dr. Underwood mentions, that in those cases where an emetic has been objected to, and the attention devoted wholly to keeping the belly open, the yellowness not unfrequently will continue to the end of the month, accompanied with langour and other symptoms of debility.

We now and then meet with instances where infants are affected with the ordinary form of jaundice, distinguished by the skin being every where discoloured, as well as the whites of the eyes. Sometimes this appearance is of little importance, scarcely requiring any particular medical aid, and disappearing spontaneously; but in other cases the infant appears to suffer much. In these, besides employing daily frictions to the stomach and belly, as well as a warm bath, we should administer saponaceous and other medicines, as advised under the head of Jaundice.—(See this Disease.)

EXCORIATIONS AND ULCERATIONS.

FROM a neglect of proper cleanliness, children are very apt to become chafed in the wrinkles of the neck, behind the ears, and in the groins.

To remedy occurrences of this nature, it will be proper to bathe the excoriated parts twice or thrice a-day with a little warm milk and water, and afterwards to sprinkle them with some absorbent powder, such as hair-powder, or chalk, or calamine, laying over all a bit of scorched linen rag. Where the excoriation is very considerable, a wash, composed of one part of rectified spirit and two of common water, may be used. A little of the ceratum plumbi acetatis spread upon fine lint may be employed as a dressing.

In some children of a gross habit of body, and particularly about the time of teething, a species of excoriation extending low down in the neck is apt to take place, which at length degenerates into large, deep sores, and not unfrequently has terminated in gangrene. Here fomentations of cinchona will be necessary, and we should at the same time administer its powder internally. Cases of this nature do not occur, however, very frequently.

When ulcerations ensue, and they are large and painful, fomentations of poppy-heads boiled in milk will be likely to prove beneficial. Should they show no disposition to heal after such treatment, some mercurial application * may be made use of, and this may be laid on every morning, spread on a bit of soft linen or fine lint. Cases of this kind, however, presenting intractable cachectic sores, or eruptions, are not likely to be met with except in weakly children, and in those whose digestive organs are much in fault; and it will be necessary, therefore, to combine constitutional with the local treatment in order to obtain the desired result. Castor oil, in doses of half a drachm to a drachm on alternate mornings, should be continued till the motions brought away assume a healthy appearance, while at the same time one or two teaspoonfuls of the following mixture † are to be given thrice a day as long as the child seems to improve under its use, the indications being to secure natural secretions from the bowels, and to exhibit tonic and alkaline remedies.

* R̄ Unguent. Hydrarg. Nitrico-Oxydi,
5ij.
Adipis Præparata, 3vj.
Aquæ Rosæ, 3ss.
Misce fiat unguentum.

† R̄ Decoct. Cinchon. Cordif. 3j.
Ammoniaë Sesquicarb. gr. viij.

Pulv. Sacchari albi, 3ij.
Solve, sumat cochl. j. vel. ij. minima ter
die.

* Take Ointment of Nitric Oxide of
Mercury, two drachms.
Prepared Lard, six drachms.
Rose Water, half a drachm.
Mix.

† Take Decoction of Yellow Bark, an ounce.
Sesquicarbonate of Ammonia eight
grains.
Powdered sugar, two drachms.
Dissolve. Let one or two teaspoonfuls be
taken thrice a-day.

HICCUPS.

SOME infants are much incommoded by hiccups; and they arise, probably, either from acidity, or from some other source of irritation of the stomach.

We know of no better forms of medicine to relieve disturbances in the digestive system of children than those given below.* The use of one or other should be continued till the contents of the bowels come away in a natural condition, or indeed till they have been passed in a healthy state for some days; and this may be done with safety on account of the perfect harmlessness of the remedy. We have often known children that were peevish and restless, or even screaming with pain, become calm and goodnatured, and thriving, when it has been thus employed. For immediate relief, it may sometimes be proper to give a few drops of the spiritus ammoniæ aromaticus, or the tinctura camphoræ comp. In some instances, a little plain vinegar has proved an effectual remedy. Where the complaint is severe, or returns frequently, it may be advisable to rub the stomach with soap liniment, to which a little tincture of opium has been added. Opium, however, is a hazardous medicine in the case of young children, when either given internally or applied externally. On this account, it should never be resorted to till other means have been tried unsuccessfully, and then only very sparingly. Hiccups, or other derangement of the stomach, should turn our attention to the child's food, and cause us to revise its dietary. It may have been unduly fed, it should be again restricted to its mother's milk; it may have been improperly fed, its diet must undergo a change, upon the principles explained in the preliminary article on their diseases.

* R₃ Pulv. Radie. Rhei. gr. viij.
Magnes. Carbonat. gr. xxv.

Mistur. Acac.
Syrup Zingib. āā 5jss.

Aquæ Carui vel Anethi, 5ix.

Misce, sumat cochl. j. minimum bis vel ter die.

Nonnunquam adiecere juvabit Spirit.
Ætheris Nitrici, 5j. ad 5jss.

Vel,

R₃ Misturæ Cretæ, 5jss.

Magnesiæ Sulphat. 5ss. ad 5jss.

Confection. Aromat. 5j.

Misce, sumat cochl. j. minimum bis vel ter die.

* Take Powdered Rhubarb, eight grains.
Carbonate of Magnesia, twenty-five grains.

Mixture of Gum Arabic,
Syrup of Ginger, of each a drachm and a half.

Caraway or Dill Water, nine drachms.

Mix. Let a teaspoonful, i. e. a twelfth part, be taken twice or thrice a-day.

Sometimes it will be advantageous to add Spirit of Nitric Ether, one drachm to one drachm and a half.

Or,

Take Chalk Mixture an ounce and a half.

Sulphate of Magnesia half a drachm to a drachm and a half.
Aromatic Confection, a scruple.

Mix. Let a tea-spoonful (one drachm) be taken twice or thrice a-day.

INFANTILE ERYSIPELAS.

THIS is a very dangerous species of diffuse inflammation, which is not often met with, however, but in lying-in hospitals. The ordinary time of its attack being a few days after birth, it was at first thought never to appear later than the month; but this has been found to be an error. It seizes the most robust as well as delicate children, and in a very sudden manner; the progress is rapid; the skin turns of a purplish hue, and soon becomes much hardened.

The milder species appears often on the fingers and hands, or the feet and ankles, and sometimes upon or near the joints; forming matter in a very short time. The more violent kind is generally seated about the pubes, and extends upwards on the belly, and down the thighs and legs, though sometimes it begins in the neck, and is equally fatal. It seems, indeed, to be always less dangerous when confined to the extremities, than where it seizes on, or spreads to, any other part of the body. The swelling is but moderate; but after becoming hard, the parts turn purple or livid, and very often sphacelate, especially in boys, when it falls on the serotum; the penis swells, and the prepuce puts on that kind of emphysematous appearance which it has been observed to do when a stone sticks in the passage, or in the anasarca of the serotum.

The disease often proves fatal in a few days.

Dissections of such children as have been destroyed by this disease have frequently discovered the contents of the abdomen glued together, and their surface covered with an inflammatory exudation, exactly similar to that found in women who have died of puerperal fever and peritonæal inflammation. In males, the tunicae vaginales have been sometimes filled with matter, which has evidently made its way from the cavity of the abdomen, and accounts for the appearances of the organs of generation just now described. In females, the labia pudendi are affected in like manner; the pus having forced a passage through the abdominal rings.

As in all cases the appearances to be observed on examination of the bodies of children who have sunk under the disease clearly demonstrate that it is truly inflammatory in its first stage, it appears rational to adopt the depleting plan within the first twenty hours. The bowels ought, therefore, to be freely acted upon by purgatives, after which leeches may be applied to the abdomen, if the skin thereof is not affected with inflammatory redness.

On a further acquaintance with the disease, Dr. Underwood found linen compresses wrung out of camphorated spirit, applied in place of the liquor plumbi subacetatis, more successful in checking the inflammation in several instances. After the cinchona

mixed with a little aromatic confection was made trial of internally, it appears that several children recovered. The decoction of cinchona ought, therefore, to be given as soon as possible, either by the mouth or thrown up in a clyster, and we may add a little confectio aromatica to it, or two or three grains of ammonia.

Drs. Evanson and Maunsell point out the importance of immediately transferring the child, if it be practicable, to a different and well-ventilated apartment, and the necessity of supporting the child's strength, while careful attention is paid to the irritation of the bowels. A wet nurse should be procured if the mother have not sufficient milk; and if the child be unwilling or unable to suck, they recommend that a teaspoonful of white wine whey be administered every hour or half hour. One-fourth or one-third of a grain of sulphate of quinine with a fourth of a grain of aromatic powder, given every four hours, is the tonic they rely upon, after having emptied the bowels with an alterative aperient (say three grains of rhubarb and two of hydrarg. eum eretâ). Starch powder at first, and subsequently warm fomentations and light poultices, as of bran or chamomile flowers, are the local applications to which they give a preference. Incisions, too, should be carefully made, to facilitate the escape of matter and sloughs after suppuration has taken place, but we deprecate too much haste or freedom in making these.

Dr. Underwood observes, that in a few instances the disease has been attended with some varieties; for infants have not only come into the world with several hard and sublivid inflammatory patches and ichorous vesications about the belly and thighs, but with other spots already actually in a state of mortification. A large eschar has soon spread upon the spine of the tibia, with smaller ones about other parts of the legs, and on several of the toes and fingers. In such cases particularly, he says, the bark of cinchona and cordials must be exhibited liberally, and the inflamed and mortified parts be well fomented, and dressed with warm applications.

Dr. Billard says (in his Treatise on the Diseases of Infants, translated by Dr. Stewart, 1839, under the head of Gangrene of New-born Children, p. 137.), Underwood appears to have confounded this gangrenous inflammation with erysipelas. We agree in the correctness of this remark, but are not over careful about names, and prefer some inaccuracy to frequent change of nomenclature, as we do also the British treatment of the malady given above, to the French which we omit.

CUTANEOUS ERUPTIONS.

CHILDREN at the breast are very subject to slight eruptions, particularly during the first month: and these serve, perhaps, to relieve the body of some acrimonious humour. Of this kind is the *red-gum*, which consists in an efflorescence or small red spots, most

usually confined to the face and neck, but in some cases extending to the hands and legs, and even over the whole body, appearing in large patches, and sometimes raised considerably above its surface. Now and then it shows itself in the form of small pustules, which are filled with a limpid, or sometimes a purulent or yellow fluid.

Every species of this eruption has generally been attributed to a predominant acid, and for the most part as we believe correctly; since we have always found them yield readily to treatment based on that supposition.

All that is generally necessary in this complaint, is to give a little magnesia, or testaceous powder, according to the state of the bowels, and to keep the child moderately warm; otherwise by the rash striking in, the acrimonious humour will fall on the first passages, and be succeeded by some more serious malady. We join in the condemnation of all astringent and repellent applications in these cases, and trust to the use of one or other of the mixtures prescribed above under the head of Hiccups. It is best to change the medicine from time to time, the amount of the aperient ingredient in each being so regulated, as to cause little deviation in the number of dejections from that which is natural, and which, be it remembered, during earliest infancy amounts to three or four in the twenty-four hours. (West, *ut supra*, p. 329.).

In cases of nausea at the stomach, or any disposition to fits upon this eruption being accidentally repelled, some light cordial, such as a few drops of the spiritus ammoniæ aromaticus, may be given twice or thrice a-day, and the child's feet, or perhaps the whole body, be put into warm water. If the child be feeble in growth and constitution, decoction of bark with soda, sweetened with a little sugar, may be given in two drachm doses, thrice a day, while the bowels are opened by half a teaspoonful or a teaspoonful of castor oil on alternate mornings.

Another species of eruption which is frequently to be met with in young children, is that to which medical writers have given the name of *crusta lactea*, or *lactumen*. This often puts on a very unpleasant appearance, but is nevertheless of an innocent nature. A remarkable circumstance attending it is, that however thick and long continued the scabs may be, the *crusta lactea* never excoriates, nor leaves any scar on the parts.

The *crusta lactea* appears first on the forehead, and sometimes on the scalp; and then often extends half way over the face, in the form of large, loose scabs, which, as the disorder increases, appear not very unlike the small-pox pustules after they have become dry. It begins with white vesicles larger than the itch, which soon become of a dark colour and then scab, with an efflux of ichor and great itching of the parts affected.

This disease is the *Porrigo larvalis* of Drs. Willan and A. T. Thomson, the *Impetigo larvalis* of Dr. Bateman, and *Eczema impetiginoides* according to Dr. Rayer, with whom we feel most disposed to concur. The last author remarks of it, that it is more

especially and frequently observed among the poor, ill lodged, badly fed, and filthily disposed classes of society; it is not, however, confined to these classes, Dr. Thomson points out as the indications of treatment, first to allay the general irritability of the mucous membrane, which is the source of the acescent state of the stomach; and as soon as that is accomplished, to aid the general powers of the system by mild tonics. The first indication he aims at fulfilling by giving hydrargyrum cum cretâ, gr. iij. ad gr. vj. every night and morning; and a fourth of a grain of ipecacuan, and half a grain of conium in powder, every eight hours for a week. For fulfilling the second indication, nothing, he says, answers so well as a combination of carbonate of soda, powder of calumba and rhubarb, in doses proportioned to the age of the child and other circumstances, twice or thrice a day. This treatment he has found speedily successful without any local applications, except those that cleanliness requires.

Our own experience leads us to put great confidence in the purgative* and tonic† medicines recommended below in this and in many other cachectic diseases. Absorbent powders, as starch or prepared chalk, dusted through muslin over the part, favour the drying of the scabs and relieve irritation. When the crusts adhere they should not be removed, but suffered to drop off, and the surrounding skin should be washed with water and oatmeal instead of soap. All faults in the diet should be corrected, whether of quantity or quality; care must be taken that over feeding do not render the mother or nurse's milk unwholesome; and any deviation in her from health should be corrected. Equal parts of cows' milk and barley water, slightly sweetened and in moderate quantity, should be the only food allowed if the child is weaned.

During early dentition, a rash very much resembling the measles is apt to make its appearance, and this usually continues very florid for three or four days, but it does not dry off in the manner of that disease. It is often preceded by nausea and vomiting, but is attended with little or no fever. During the continuance of the eruption, some saline medicine, as the citrate of potass, or of soda, may be useful. Thus a scruple of carbonate of potass, or half a

* R^y Pulv. Radic. Jalap. gr. ij.—v.

Hydrarg. Chlorid. gr. j.

Pulv. Zingib. gr. ss.

Misce fiat pulvis, alternis auroris ex saccharo sumend.

† R^y Decoct. Cinchon. Cord. ℥ijss.

Sodæ Sesquicarb. ℥ij.

Syrup. Sarz. ℥ss.

Misce. sumat ℥ij ad ℥ss. bis die.

* Take Powdered Jalap, two to five grains.

Calomel, one grain.

Powdered Ginger, half a grain.

Make a powder, to be taken every other day in sugar.

† Take Decoction of Yellow Bark, three ounces and a half.

Sesquicarbonate of Soda, two scruples.

Syrup of Sarsaparilla, half an ounce.

Mix. Let two drachms to half an ounce be taken twice a-day.

drachm of sesquicarbonate of soda, dissolved in eleven drachms of water, should be neutralized by eighteen or sixteen grains of citric acid, and after standing for a little while be sweetened with a drachm of syrup of orange peel, and of this a teaspoonful may be given thrice a day; the bowels being acted upon at the same time, if necessary, by some mild aperient.

Other rashes, in which the spots are larger, and often attended with some degree of fever (occasioned probably by the irritation of teething), are frequently to be observed during a more advanced stage of dentition, particularly while the double and eye-teeth are cutting. These require only a proper attention to be paid to the state of the bowels, unless the fever is considerable; in which case we should pursue the steps recommended under the last head.

A slight species of *essera* or *nettle-rash* is another eruptive disease to which infants are liable; but this requires in general little attention, and often disappears in a few hours.

An eruption very much resembling the itch is sometimes to be met with in infants at the breast; as likewise in children who have cut all their first teeth. It usually begins about the arms and thighs, but always spreads soon afterwards to the other parts, and not unfrequently extends from the head to the feet. In some places it appears in very small eruptions like the points of pins, with watery heads; and in others, in as large ones as peas; and sometimes in foul blotches, which, after breaking, form sores and broad, ugly scabs. These die away, and similar ones show themselves successively in other parts, sometimes for two or three months, leaving the skin of a dirty hue.

We cannot lay down a special treatment for every variety of eruption that may appear during the period of infancy. We believe it may be assumed that they depend upon some fault in the processes of digestion, as arising either from improper material supplied as food, or from some faulty action of the organs engaged. Our knowledge has not attained the point of showing what particular derangements correspond with the appearance of the different eruptions; so that our treatment can only be based on general principles. To neutralize acidity, to soothe irritation, and to promote healthy secretions from the bowels and skin by means of such mixtures as are mentioned under the head of Hiccups, is an indication of primary importance in all cases; and its fulfilment is often accompanied by disappearance of the rash and by improved health. Ammonia seems to have great power in many diseases of the skin, whether of infants or adults, especially in those partaking of the character of erysipelas, or nettle rash. Bark, with ammonia, potash, or soda, is useful in many of a pustular and even of a vesicular nature, especially where these occur in weakly subjects; but benefit is found in acting freely on the bowels during their employment.

The salines are appropriate where there is general febrile disturbance.

The tender skins of infants do not tolerate strong ointments; the absorbent powders mentioned above, and a weak zinc ointment, made with one part of the unguentum zinci and two of lard, are among the best local applications. Sulphur ointment is too irritating. We treat a constitutional malady with constitutional in preference to local remedies. Cleanliness, however, is always desirable, and with a view to it warm baths may be employed; and any discoverable error in diet should of course be remedied. If a child have the itch, we must resort to a mild form of sulphur ointment.

ACIDITIES, GRIPES, AND FLATULENCY.

COSTIVENESS, improper or too much food, bad milk, weak digestion, and that natural tendency there is in the stomach of all children to generate acidity, are the causes which give rise to these affections.

When the food becomes acid on the stomach, instead of being properly concocted and converted into chyle and blood, it is likely to give rise to continual crying, restlessness, drawing up of the legs forcibly to the body, hiccups, vomiting, diarrhoea, flatulency, sour eructations, griping pains, green stools, and a depression of strength; and where the irritation is very considerable, convulsions are apt to ensue.

If acidity prevails in a high degree, and the infant is troubled with sour belchings and much irritability at the stomach, it will be advisable to give a few doses of the mixture of rhubarb and magnesia till the bowels have been relieved of all offending matters; nor will there be occasion to change this remedy for some days, at least, unless the motions be too frequent. It not unfrequently happens, however, that it is found less aperient when the amount of acid in the intestines, and their irritability, have been diminished by its previous action. If the bowels continue to act too freely, the chalk mixture may be substituted, either alone or with just enough Epsom salts or compound tincture of senna to prevent their becoming too much constipated. Lime water has a very soothing influence on the irritated mucous membranes, but must be given in considerable quantities to be of much service, and is on that account inconvenient. But where the infant is fed, and one or two ounces, with as much milk, can be given daily, it has often a very beneficial effect. It will often be found that the flatulency will disappear with the acidity and other inconveniences; and its absence will sometimes be promoted by the occasional administration of two or three grains of hydrargyrum cum cretâ. Aromatics and volatile oils we regard as rather facilitating the expulsion, than preventing the undue generation of gases; never-

theless they are very useful on account of the relief they afford from pain. It cannot be too much insisted upon, that the only philosophical plan for the abatement of pain and restlessness, and for the procuring of sleep, is that which seeks to remove the causes or conditions upon which the disturbance depends. And if this be a sound rule of practice generally, it is more especially so where young children are the subjects of our treatment, and should exclude that recourse to opiates which is the refuge of the unskilful practitioner, and the ready means whereby the nurse or mother secures her own quiet at the cost, it may be, of the infant's life. Again, it must be remarked, that if our rule be sound, it points out a deeper aim than that of merely temporarily correcting some unpleasant symptoms by a dose of a carminative, antacid, or astringent mixture; it teaches us not to expect to master a disease with a placebo, and not to be content with the brief calm it may procure. Nurses and mothers have too great a dread of the debilitating effects of all medicine, and are unwilling to persevere in its use; but in our view it is rather by prolonged and gentle agencies, than by any heroic measure, that we can bring back the digestive organs to a healthful state, such as shall cause the child to thrive on the best selected food. Alkalies and alkaline earths, write Drs. Evanson and Maunsell, exert a decided sedative influence, especially upon the mucous membranes when in a state of irritation or chronic inflammatory action, while they at the same time alter and improve the secretions. Their antacid properties, in addition, render them peculiarly eligible in the treatment of infantile disease, and we have often experienced their utility, more especially in controlling gastric or intestinal irritation. They mitigate pain and spasm, appearing to restore or equalize the peristaltic motion. In all this we cordially concur, but we give a decided preference to the alkaline earths, chalk and carbonate of magnesia, above soluble solutions of the latter, as that of Dinneford or of Murray, and also above the alkalies, potash and soda. We attach importance to the absorbent as well as to the antacid qualities of the former, and we think they have an advantage, inasmuch as they can be given in excess without producing excessive alkalinity; the only precaution being, that they should not be allowed to accumulate in the *primæ viæ*. This alkaline and absorbent treatment, with the interposition of an occasional mild aperient, if necessary, should be continued till the secretions of the bowels are healthy, and such a plan will be attended upon the whole with less of physic taking and more health, than if the medicine were intermitted directly the more urgent symptoms ceased, to be again resumed upon their speedy return. In addition to the forms given in preceding articles on the diseases of children we annex those of the former edition of this work.*

* R. Cret. Præparat gr. xij.
Aq. Ment. Pip. f. ʒij.

| * Take Prepared Chalk, twelve grains.
Peppermint Water, two ounces.

As acidities, gripes, and flatulency, seem frequently to originate in some error of the diet, the proper regulation of this ought to form a principle part of their cure. Sometimes it may be necessary to change it almost wholly, or at least to withdraw something from whatever farinaceous substances are used.

OF VOMITING.

WHEN what has been taken is returned crude and unaltered, it may be suspected to arise from over-feeding, and to require nothing more than temperance for its cure. Vomiting, however, is often an attendant on other complaints, and sometimes of itself constitutes an original disease.

"Vomiting," writes Dr. West, "is sometimes one of the first symptoms of inflammation of the lungs and pleura, it frequently ushers in the eruptive fevers, and marks the early stages of cerebral disease. Causes more purely local produce a similar effect, and vomiting often attends upon infantile diarrhoea, and is associated with signs of intestinal disorder, especially when such disorder has been excited by improper food." Vomiting, it may be added, does arise from obstructed intestines, as from strangulated hernia, of which last affection existing in a child, seventeen days of age, relieved by operation, an example has been published by an eminent surgeon. These several sources of the symptoms should be present to the mind of the practitioner, that he may be careful to trace it to its true origin. A little care only is necessary for the establishment of a correct diagnosis. It is, however, only of the variety resulting from gastric irritation that we are about here to speak. If a child, after a fast of longer than ordinary duration, be put to the breast of its mother, fatigued perhaps by walking or other occupation, and allowed to suck abundantly, or if there have been some other cause of temporary feebleness followed by too free distension of the stomach, vomiting is apt to occur; the return of which is to be prevented by total abstinence for a couple of hours, and then a teaspoonful of cold water may be given and repeated in half an hour; and if this is retained, cold barley water may be given by teaspoonfuls

Spirit. Lav. C. f. ʒss.

Spirit. Carui, f. ʒii. M.
ft. Mistura, cujus sumat cochl. minim. ij.
pro re natâ.

Vel,

℞ Mistur. Cretæ, f. ʒij.

Tinct. Calumb. f. ʒij.

Liquor. Potassæ Subcarbonat. ℥x.—
xv. M.

Capiat cochl. minimum ter quaterve in die.

Compound Spirit of Lavender,
half a drachm.

Spirit of Caraway, two drachms.

Of this mixture the child may take two
teaspoonfuls occasionally.

Or,

Take Chalk Mixture, two ounces.

Tincture of Calumba, two drs.

Solution of Subcarbonate of
Potass, ten to fifteen minims.

Mix them, and let a teaspoonful be taken
three or four times a day.

frequently repeated; and then in eight or ten hours, if the vomiting have not recurred, its mother's milk, or cows' milk with water, may be given by teaspoonfuls; and in from twelve to twenty-four hours, if these fluids have been retained, it may be allowed to suck very sparingly at short intervals. Such is the plan recommended by Dr. West, which he states to be sufficient in many instances to restore the child to health, our only doubt is, whether the whole of it be in many cases necessary. Where there are other signs of gastric or intestinal disorder, together with the above rigorous dietary, he recommends half a grain or a grain of calomel, according to the age of the child, to be placed upon its tongue, and if the vomiting have already lasted for some hours, a small mustard poultice to be placed on the epigastrium, and in a couple of hours a teaspoonful of a mixture containing small doses of bicarbonate of potass (say two or three grains to the dose), and of hydrocyanic acid (we suppose about half a minim of that of the Pharmacopœal strength); and this to be continued every three or four hours as long as the irritability of the stomach continues. Agreeing in the other particulars, we ourselves should prefer three grains of carbonate with as much sulphate of magnesia, given in thin mucilage, sweetened with a very little sugar, to the saline just spoken of.

OF A LOOSENESS OF THE BOWELS.

VARIOUS causes may and do occasion a diarrhœa in infants; and perhaps in the greater number of instances it is brought on either by too much or unsuitable food, in which cases a diligent attention must be paid both to the choice and regulation of the diet.

In some instances, however, it may be symptomatic of other diseases, or may arise from an exposure to cold, or an increased secretion of bile. In the latter case, it may be advisable first of all to cleanse the stomach by a gentle emetic; but in all it will be proper to clear the intestines by a few grains of rhubarb and magnesia, the operation of which being over, we may give a little of the prepared chalk*, joined with some aromatic, twice or thrice a day.

* ℞ Cret. Preparat. ʒss.
Aq. Anethi,
— Cinnam. āā f. ʒjss.

Tinct. Card. C. f. ʒij.

Syrup. Cort. Aurant. f. ʒj. M.
Capiat cochl. j. infantis bis terve in die.

Vcl,
℞ Pulv. Cinnam. Comp. gr. ij.

Cret. Preparat. gr. vj. M.
ft. Pulvis 6tis horis sumendus.

* Take Prepared Chalk, half a drachm.
Dill Water,
Cinnamon Water, of each one
ounce and a half.
Compound Tincture of Cardamoms, two drachms.
Syrup of Orange Peel, one dr.
Of this mixture a pap-spoonful is to be taken twice or thrice a-day.
Or,
Take Compound Powder of Cinnamon, two grains.
Prepared Chalk, six grains.
Mix them, and let this powder be taken every six hours.

Without attempting to discriminate minute differences, it may be stated generally, that the diarrhoea of infants may occur in two extremes, either as a simple mucous purging, with no febrile disturbance, or as an inflammatory disease marked by mucous and bloody stools, and accompanied with considerable pain, with heat and dryness of the skin, with wasting, and great constitutional disturbance. While the various degrees in which these symptoms are combined, mark the intermediate cases as approaching more nearly to one or other of the extremes.

For the most part the disease, when of short duration, is easily controlled; yet young infants bear ill the debilitating effects of a very violent or of a protracted drain upon the system; and the prostration produced in either way may put on a more formidable aspect if it give rise either to extensive collapse of the lungs, or to that nervous condition which constitutes spurious hydrocephalus. Increased care in regulating the quality and quantity of the food will be required of us in all forms of this disease, and will, in the milder varieties, suffice for its removal. Sometimes in addition to this a single dose of castor oil, as ʒj, or two or three grains of rhubarb, with as much carbonate of magnesia, will also be required to remove offending matters, and then all will be well; or it may be requisite to give one or two teaspoonsful of chalk mixture, with or without two or three grains of aromatic confection, thrice a-day for a few days, repeating the mild aperient on every alternate or on every third morning. It appears to be matter of general consent in the profession, and a circumstance of which others are well aware that spontaneous purgings either do not all or do not readily expel the morbid contents of the intestines. Hence arises the very general practice of commencing the treatment with some mild aperient; and as, notwithstanding the utmost care, some portion of the food, or the secretions of the intestines themselves, may again collect and form sources of irritation, the repetition from time to time of some mild aperient is a point to which we attach great importance, and from which we have witnessed manifest advantage. This is only not necessary when some laxative is confined with the absorbent itself, as where from three to six grains of Epsom salts, or from five to ten minims of tincture of senna or of rhubarb, are added to each dose of the chalk mixture, or where the medicine is altogether aperient, consisting of one drachm of Epsom salts with two drachms of tincture of rhubarb and ten drachms of caraway water, a form suggested by Dr. West for the treatment of simple diarrhoea, and of which a teaspoonful is to be given thrice a-day to an infant of one year old. Gum arabic enters into the composition of the chalk mixture, and is useful in suspending the powdered chalk; we conceive that this, or some form of nucilage, is a judicious adjunct to all our medicines in cases of gastro-intestinal irritation, and that it is one which in this country is too much neglected. A mixture of rhubarb and magnesia would probably suit the same cases as those for which

Dr. West's is designed; in either case, however, the child should be seen more frequently than can always be done with out-patients at public institutions.

It is well known that children, during teething, are very liable to be attacked by diarrhœa, which, if it be but slight, is probably best left alone, and will cease on the complete protrusion of the tooth. This is a variety of the disease with which we have always been careful not to interfere too violently, and which we would rather regulate and restrain than suddenly arrest. To us it appears that, for it, some of the mixtures mentioned above, containing an absorbent and a laxative, or either of the two laxatives, is well suited. That vomiting is one of the earliest symptoms of acute hydrocephalus, or of a tendency to that disease, is an admitted fact; that diarrhœa is an occasional premonitory or precursory symptom is an observation of Dr. Abercrombie, which we ourselves have verified in a few instances; and it has always occurred to us to believe that the diarrhœa here spoken of is due rather to some cerebral excitement than solely to intestinal irritation. Our treatment has been modified with this view, and we have had no occasion to be dissatisfied with the result. Dr. West, however, treats it on a different system, and we subjoin his remedies. Lancing the gum, he thinks, should be practised only when the tooth is near the surface, even though the gum be at one point tense and swollen. The medicine which he recommends consists of three or four drops of liquor potassæ, with as much ipecacuan wine, with a little mucilage, given in milk about every four hours; and a grain of Dover's powder, and one of mercury with chalk, to be given every night after the administration of a tepid bath.

In the more chronic cases of diarrhœa, or in the second stage of the more obstinate ones, astringents must be resorted to; we have often given the decoctum hæmatoxyli alone in drachm doses, or with a grain of sesquicarbonate of ammonia, or five drops of spiritus ammoniæ aromaticus, or five of spiritus ætheris nitrici, if there were much prostration. At other times we have given two drachms of a mixture containing equal parts of the decoction of logwood and of lime water, or of the former and of chalk mixture, exhibiting an occasional mild aperient; while, in some instances, where there has been a hot and dry skin and rapid pulse, and perhaps some bronchial affection also, we have added half a grain or a grain of ipecacuanha and two of nitre to each drachm dose of the decoction. Dr. West proposes five grains of the extract of logwood, with ten minims of tincture of catechu, in some sweetened aromatic water, and continues the mercury with chalk, and Dover's powder at bed time. If the evacuations or the breath have a sour smell, three grains of sesquicarbonate of soda are added to each dose of the mixture, and any milk which is given to the child has one drachm of prepared chalk to the pint first stirred in it, and is used after subsidence. We have frequently availed ourselves of Dr. Clarke's suggestion of equal parts of milk and lime water for use in these

eases, directing it to be very slightly flavoured with a little brandy where the debility was very great. The logwood is well suited for establishing the strength during convalescence; but if it be necessary to change it, decoction of bark with soda and a few drops of the tincture, or the dissolved extract in like admixture, may be substituted. The ammonio-tartrate of iron, in three grain doses, given in syrup and water, is well suited to correct the anæmic condition which may remain.

The more inflammatory diarrhœa or dysentery of infants is one which we have been accustomed to treat with ipecacuanha and small doses of laudanum. We give a form below * which we have often used in the diarrhœa following measles, which is wont to be accompanied with some degree of bronchitis; and in other cases of diarrhœa attended with catarrh. We have used also an emulsion of castor oil † with laudanum, which we had often seen successfully employed in dysentery by the late Dr. Frampton, and we have a high opinion of its merits. Dr. West also has adopted this plan of treatment on the strength of Dr. Baly's more recent experience of its value.

Where there is severe vomiting, neither of these medicines will be borne by the stomach; for such cases Dr. West advises the routine of practice already mentioned under the article Vomiting, and recommends, besides, that a third of a grain of calomel and a twelfth of a grain of opium, should be placed on the tongue of the infant (supposing it to be twelve months old) every three hours, which he finds will generally allay the irritability of the stomach in the course of four or five, yet it will be requisite to adhere to the same plan of treatment for several hours longer. The medical attendant must, in all cases, be careful to distinguish the convulsions and other nervous symptoms which often follow in the train, or some hours after the arrest, of a severe diarrhœa from those which belong to hydrocephalus. It is an old proverb, often verified

* R. Pulv. Ipecacuanhæ, gr. vj. ad gr. xij.

Misturæ Acaciæ, ʒij.
Syrup. Tolutan. ʒj
Aquæ puræ, ʒix.
Potassæ Nitratis, ʒj.
Tincturæ Opii, mʒj. ad mʒij.

Misce sumat cochl. j. minimum ter die vel
6tis horis.

† R. Olei Ricini, ʒj.
Liquor. Potassæ, ʒss.
Misturæ Acaciæ, ʒjss.

Syrup. ʒj.
Aquæ Cinnamon, ʒj.
Tincturæ Opii, mʒj. ad mʒii.

Fiat emulsio ejus sumat cochl. j. mini-
mum quartis vel sextis horis.

* Take Powder of Ipecacuan, six to twelve
grains.

Mixture of Acacia, two drachms.
Syrup of Tolu, one drachm.
Water, nine drachms.
Nitre, a scruple,
Tincture of Opium, six to twelve
minims.

Mix, and let a teaspoonful be taken thrice
a-day, or every six hours.

† Take Castor Oil one drachm.

Liquor of Potash, half a drachm.
Mixture of Acacia, a drachm and
a half.
Syrup, one drachm.
Cinnamon Water, an ounce.
Tincture of Opium, six to twelve
minims.

Make an emulsion; a teaspoonful to be
taken every four or six hours.

in medical experience, that extremes meet; exhaustion producing in one case phenomena nearly approaching those due to excessive local action in another; the treatment, however, must be opposite, the spurious hydrocephalus demands support and stimulus, and will only be hastened to its fatal termination by the means appropriate to the inflammatory disease.

TRISMUS NASCENTIUM, OR THE LOCKED JAW OF INFANTS.

THIS is a disease of very frequent occurrence in the West Indies, where many infants are carried off by it soon after birth, and especially negroes, and those of colour, as they are usually called. It is well known, however, to prevail in other parts of the world, and is frequently met with in Minorea, in Switzerland, some of the northern districts of Scotland, especially in the island of St. Kilda, and among the children of the Westmann Islands near Iceland. It has also been met with in Ireland.

In most cases the disease is wholly confined to the jaw; but in a few a considerable contraction and rigidity of other muscles of the face, with strabismus and rolling of the eyes, together with subluxus tendinum, have been observed.

It has been attributed to visceral irritation, costiveness, and not purging off the meconium in the bowels; to dividing the navel-string with a blunt, lacerating instrument; to not paying attention to its falling off, and consequent irritation from a neglect of the remaining sore, which assumes a sloughy appearance; and to exposure to cold, and currents of air, negro women in the West Indies being usually permitted to lie in at their own houses, which are often in but very indifferent repair.

No effectual means having yet been discovered for the cure of this disease, all that can be done is to avoid as much as possible the several causes which have been mentioned as being likely to give rise to it. Every lying-in woman ought, therefore, to be accommodated in a comfortable house, which is annoyed neither by smoke, rain, nor any partial current of air. On the birth of the infant, the navel-string should be divided with a pair of sharp scissors, after which the portion that remains should be wrapped up in a little scorched linen. No force whatever must afterwards be used to bring on its separation; it should come away spontaneously: and if any little ulceration is left behind, it ought to be attended to, and daily be dressed with some mild, healing ointment, such as the unguent. eetacei or ceratum calaminæ, avoiding at the same time any great pressure upon it by bandages.

Nothing can be more satisfactorily proved than the tendency of a vitiated atmosphere to produce this form of tetanus. Sixty years ago

every sixth child born in the Dublin Lying-in Hospital died within a fortnight after birth, and trismus was the cause of death of nineteen-twentieths of these children. Dr. Joseph Clarke adopted means to secure the efficient ventilation of the hospital, and the mortality of the children fell at once to 1 in $19\frac{1}{3}$; and during Dr. Collins's mastership, from 1826 to 1833, it was only 1 in $58\frac{1}{2}$, and but little more than the ninth part of that mortality depended on trismus.*

As I have supposed the disease to arise most commonly from the irritable state of the divided funis, might it not be advisable, by way of prevention, to wet the part frequently with a watery solution of opium?

To remove costiveness or visceral irritation, and carry off the meconium, which has been assigned by some practitioners as a probable cause, one or two teaspoonfuls of the oleum ricini may be given to the child the day after its birth, which may again be repeated in two or three days, should the mother's milk not procure a sufficient number of stools.

On an attack of the disease, we ought certainly to have recourse to the means advised under the head of Tetanus, however unsuccessful they may be likely to prove. A few recoveries, it is said, have been effected by the warm bath.

FEBRIS INFANTUM REMITTENS, OR THE INFANTILE REMITTENT FEVER.

FROM the age of one year to twelve or thirteen, children are liable to be attacked with a fever, that makes its advances very gradually, manifesting itself by irregularity in the bowels, which are sometimes too costive, and at others too much relaxed.

On its coming on, the child becomes fretful, his lips are dry, his hands hot, his breath short, the head painful, and the pulse quick, being often 120 in a minute: he is unwilling to stir or speak, the sleep is disturbed by startings, and the food rejected; sometimes very little is discharged from the intestines; and at others too much, the stools being often mucous or slimy; some children are delirious, or lost and stupid; many for a time are speechless. In the course of the day there are several slight accessions of fever, during which the child is usually drowsy; in the intervals of these paroxysms he appears tolerably well, though at times more peevish than usual.

These symptoms probably manifest themselves, more or less, for eight or ten days, when all at once a more violent paroxysm of fever will arise, preceded by a shivering fit and by vomiting. The pulse rises to 140 in a minute; the cheeks are flushed; the

* West's Lectures, p. 12.

drowsiness is much increased, and the child keeps picking almost incessantly at the skin of the lips and nose, and of the angles of the eyes.

This species of fever is mild at its commencement, slow in its progress, and very uncertain in its duration. Dr. Copland, indeed, marks, as one of its characteristics, that it is generally chronic. He further observes, that it was very generally imputed by writers in the three last centuries to worms, which are rather a complication than a cause of the complaint.

Its essential character and affinities may be considered somewhat doubtful, since we find modern authors differing widely on these points.

Thus, a writer in the *British and Foreign Medical Review* for October, 1841, in noticing an article on this subject, by Dr. Locock, in the *Library of Medicine*, expresses himself as follows: "Here a certain affection of the gastro-enteric mucous membrane is pronounced to be, not only the original cause, but to furnish a measure of the intensity of the symptoms which it has been the custom to term infantile remittent fever; in fact, to bear the same relation to his so-called primary fever, as inflammation of the lung to the fever of pneumonia; and all this is most perfectly correct. But, in acknowledging the accuracy of Dr. Locock's pathology, we wish he had gone a step further and denied to the malady the term fever."

Dr. Copland, on the other hand, says, p. 957. of the first vol. of his *Dictionary*, that he is "led to infer that it arises most frequently from the same causes as produce other periodic fevers, namely, terrestrial exhalations or miasmata; and that less intense or concentrated states of these exhalations than are required to produce either agues or remittents in adults will often occasion the latter in children." "The French pathologists," he adds, farther on, "view this complaint as symptomatic of inflammation of the digestive mucous surface; but of the truth of this doctrine there is no conclusive evidence. Post mortem appearances certainly lend it no support." (*Ibid.* p. 959.)

"If, however," observes Dr. West (*Lectures*, p. 454.), "we look attentively at the characters of this disease, and compare them, as has been done by MM. Rilliez and Barthez, with those presented by the simple continued fever of the adult, we shall, I think, see so close a correspondence between the two affections as to remove all doubt with reference to their identity."

Notwithstanding the severity of the symptoms, in the worst cases a fatal termination is rare; sometimes, however, in the earlier course of the affection, death may occur in consequence of cerebral inflammation; or, at a much later period, it may result from gradual exhaustion. Far more frequently, however, manifest improvement is observed after a time, and though the progress is slow and relapses are easily produced by any indiscretion, recovery eventually takes place.

In some respects it resembles hydrocephalus acutus, and I apprehend is sometimes mistaken for it; but in the latter there are occasional screamings, with much tossing of the hands above the head, intolerance of light, with more or less of squinting; whereas in the remittent fever of infants, these appearances are not to be met with. In this fever the desire for food is destroyed, and the little patient will take neither aliment nor medicine. In hydrocephalus, on the contrary, he will usually take whatever is offered to him without reluctance. The faeces are remarkably changed from their natural appearances in the remittent fever, being somewhat black, and smelling like putrid mud; and at others they are curdled, with shreds of coagulated lymph floating in a dark-greenish-coloured fluid. In acute hydrocephalus we meet with nothing very similar in the motions.

We are indebted to our friend Dr. Billing for a very simple and successful plan of treating this disease, which consists in the persevering exhibition of calomel. Thus, to a child two or three years old, it should be given in the dose of one grain every night, while to those older the same quantity is to be given night and morning, or three times a-day. Little benefit will be remarked at first, that is to say, probably, for a week or more; but if we persevere, the evacuations of the bowels will be found gradually to improve in character, the skin to become cool and moist, the appetite to return, and nothing but weakness will remain: and these changes will arise without any specific action of the mercury upon the gums. Light broths and farinaceous food should, during this time, form the diet. Tonics, as the sulphate of quinine, the decoction of bark, the infusion of cascarilla or the ammonio-citrate of iron, will be useful when the secretions are restored to a natural condition. Change of air will confirm convalescence, or, indeed, will promote the cure at an early stage of the disease.

The first indication of treatment, namely, the restoration of the healthy functions of the digestive organs, may no doubt be accomplished by other means, as, for instance, by purgatives of calomel and rhubarb, or calomel and jalap, in doses proportioned to the age, given, on alternate mornings; together with some saline diaphoretic, as the liquor ammoniæ acetatis, or a solution of citrate of potash or of soda, with moderate doses of ipecacuan wine. Or where the bowels are relaxed the chalk mixture, with a small quantity of sulphate of magnesia, to prevent its constipating too much, may be substituted for the saline. The exhibition of tonics may follow in the same stage of improvement, as where calomel alone has been employed; and the bowels will only require to be kept acting gently, as soon as the character of the dejections has become healthy.

If the head is much affected, its temperature greater than the rest of the body, and there are other marks of sanguineous determination to the brain, the case must be treated as one of hydrocephalus acutus. Blood should be freely drawn by leeches, by

cupping, or by opening either the external jugular vein or a branch of the temporal artery.

A tepid bath may be useful in this fever after the stomach and bowels are properly cleansed.

STOMATITIS, OR INFLAMMATION OF THE MOUTH.

THERE are three different varieties of this affection, sufficiently distinct to warrant a separate consideration of them.

Thus there is a peculiar appearance of the mucous membrane lining the mouth, arising from the presence of small white spots, which look like little bits of white curd lying upon its surface; but which, in fact, are so firmly adherent to it as not to be removed without some difficulty, when the subjacent membrane is left red and often slightly bleeding. These specks appear upon the inner surface of the lips, often near the angles of the mouth or upon the inside of the cheeks, and upon the tongue, especially near the tip and edges. These *aphthæ*, as they are called, are at first circular, and no bigger than a pin's head; but after a day or two enlarge to three or four times their original size, and assume a less regular figure. By degrees they fall off, leaving the mucous membrane somewhat redder than natural, or they may fall off and reappear several times before the membrane resumes its healthy aspect. In some cases the specks coalesce, or the deposit from the first appearance presents more of the character of a false membrane; and the mouth is then seen to be extensively coated with it. In the latter case, the colour being more yellow than in that of the isolated specks. The smaller spots constitute the disease called *aphthæ* or *thrush*; the more extensive deposits were once supposed to constitute a different malady, the *Muguet* of French writers; but Dr. West, from whom the above description is taken, regards them only as modifications of one and the same disease. Whether the formation of these spots is essentially dependent upon the presence of a parasitic conferva, or whether this be an accidental accompaniment of the false membrane of which they consist, he does not profess to determine.

The thrush in children has generally been supposed to arise from acidities or some other acrimonious humour lodged in the stomach and bowels. One cause of these is worms, and it appears in this way that these two complaints are frequently conjoined. Another occasional cause is bad milk, which may be vitiated by whatever is injurious to the nurse's health, such as great anxiety, violent passions, poor or improper diet, &c. Artificial feeding is a still more fertile source of thrush.

In some instances it may probably depend upon the natural habits of the infant as well as upon the mode of bringing it up,

particularly in regard to food, air, and the state of the bowels. This seems a warrantable conclusion, inasmuch as the thrush is sometimes found to seize every infant in certain families, in whatever way the children may be managed, as well as to occur occasionally in others upon a want of proper attention to the state of the alimentary canal, where a great number of other children, properly watched, have uniformly escaped it.

This disease is rarely attended with much fever at its commencement, although the mouth is frequently so much heated as to excoriate the nipples of the nurse, and becomes so tender that the child is often observed to suck with reluctance and caution, and sometimes to swallow with difficulty. The subjects for the malady are, for the most part, sickly children, who have long laboured under greater or less impairment of their digestive functions. The bowels are generally relaxed, the evacuations of a green colour and very sour, and often so acrid as to irritate and inflame the anus and adjacent parts.

The morbid appearances after death will depend upon the nature of the accompanying malady, to which also the constitutional treatment must be directed. And as there is generally an irritable state of the bowels with morbid and acid dejections, the alkaline and absorbent earths, chalk and magnesia, in some of the forms given above, afford the most appropriate remedies in the first instance. The bowels should also be gently acted on from time to time by castor oil, or a few grains of rhubarb and hydrarg. cum cretâ, till the dejections become healthy. After this the extract or decoction of bark, with soda, is useful in renovating the strength, or some of the mild preparations of iron, as the ammonio-citrate or ammonio-tartrate, may be resorted to. The compound decoction of sarsaparilla, with grain doses of iodide of potassium, is also beneficially employed in scrofulous children. The local treatment consists in cleansing the mouth, after each occasion when food has been taken, with a soft, clean linen rag tied on the end of a small stick or quill, and afterwards using a little of the mel boracis, or applying with a similar instrument a wash containing a scruple or half a drachm of borax to the ounce of water, or of rose water; or at times it will be necessary to touch the affected parts with a wash of five grains of nitrate of silver in an ounce of distilled water once or twice a day.

The second form of stomatitis has been termed ulcerative, and is the same affection as that more generally known as *cancrum oris*.

And the third is that in which there is gangrenous inflammation, generally involving the cheek; and if not arrested early, proving almost invariably fatal.

The *ulcerative stomatitis* or *cancrum oris* attacks the gums, commencing for the most part in front of those of the incisors, particularly those of the lower jaw. The gum is found to be red and swollen, the portion in contact with the teeth being eroded, and presenting a spongy and sloughy surface. The teeth are

loosened, and sometimes drop out. The saliva dribbles from the mouth, and the mouth is offensive. The complaint is of a chronic character, and even where it ceases to spread, the affected parts do not heal readily. The surface of the lip in contact with the gum is apt to become inflamed and more or less ulcerated, and the glands under the tongue are swollen and painful. Children suffering from this disease are such as have had their health impaired by deficient food and clothing.

Formerly tonics, as bark, with the mineral acids, were much relied upon in the treatment of this complaint, while astringent* or other washes† were applied locally; but Dr. West conceives that we have now almost a specific in the chlorate of potass, recommended by Mr. Hunt, for the gangrenous affection presently to be noticed. Three grains of this salt dissolved in sweetened water, and given every four hours, is said to be the proper dose for a child three years of age, and to complete the cure in a week or ten days. Aperients should be given, if necessary, so as to regulate the bowels; and quinine or some other tonic will serve to restore the strength when the local affection is removed. The food should be light and nourishing, and it is useful to cleanse the mouth after taking it.

Under the title of *gangrenous stomatitis*, M. Billard includes every kind of sloughing ulceration occurring in the mouth; he speaks of the disease as sometimes supervening on the other forms, whether follicular or ulcerative. Drs. Evanson and Maunsell refer to the same class the affections of the fauces which arise in the worst varieties of scarlatina, or of other febrile diseases.

* R₃ Decoct. Hordei, f. ℥iv.
Sodæ Biborat. ʒss. — ʒj.

Mellis Rosæ, f. ʒss. M.
fiat Lotio.

Vel,
R₃ Confect. Rosæ, ʒss.
Aluminis, ʒss.
Aq. Puræ, f. ℥iv.
Acid. Sulph. Dilut. ℥xv.

Tinct. Myrrh. f. ʒss. M.
fiat Lotio.

† R₃ Liquor Sodæ Chlorinat. ʒij — ʒiij.

Aquæ Distillat. ʒiiss.

Mellis Despumat. ʒij. M.
fiat Lotio.

Vel,
R₃ Pulv. Calcis Chlorinat. ʒss.

Aquæ Distillat. ʒv.
Tere et cola, et liquori colato adde mellis
ʒij. ut fiat Lotio.

* Take Decoction of Barley, four ounces.
Biborate of Soda, half a drachm to
one drachm.

Honey of Roses, half an ounce.

Mix them for a wash.

Or,

Take Confection of Roses, half an oz.

Alum, half a drachm.

Pure Water, four ounces.

Diluted Sulphuric Acid, fifteen
minims.

Tincture of Myrrh, half an ounce.

Mix them for a wash.

† Take Solution of Chlorinated Soda, two
to three drachms.

Distilled Water, three ounces and
a half.

Clarified Honey, two drachms.

Mix them for a wash.

Or,

Take Powder of Chlorinated Lime, half
a drachm.

Water, five ounces.

Triturate and filter, and add to the filtered
liquid two drachms of honey to make a
wash.

Without denying the appropriateness of these arrangements, we intend to limit the present notice to that most formidable affection—the gangrenous erosion of the cheek, of Dr. Underwood and others—a malady happily of very rare occurrence, but important on account of its almost uniform fatality.

This affection, we conceive, should be regarded rather as a consequence or sequela of other chronic and depressing illnesses than an original malady in itself, in which respect it seems to bear some analogy to the sloughing sores on the nates, or other parts, so common consequences of continued fever. We have said that it is a very rare disease, in proof of which we may adduce Dr. West's experience, which has presented him with only six, and our own, which has furnished but two examples of it. In five of the former, and in both of the latter, it was, however, speedily followed by death from exhaustion.

Mr. Hunt, in his paper in the 26th volume of the *Medico-Chirurgical Transactions*, treats of it as an extension of the *cancrem oris*, when neglected, while Dr. West insists upon the necessity of distinguishing the two complaints. If it be conceded that the *cancrem oris* may in some cases be followed by phagedæna of the cheek, it appears that the former disease runs its course, in the great majority of instances, without any such consequence, while the latter often arises without the precedent affection of the gums.

Gangrene of the mouth is observed chiefly in children between the ages of two and five years, and follows most commonly after continued fever, or the exanthemata, especially measles. It commences generally with swelling of the cheek, which is tense and hard, and red and shining, with a central spot brighter than the rest, while on the corresponding part within there is generally a deep excavated ulcer with irregular edges, and its surface covered by a dark brown slough.

The extension of the disease within involves the gums opposed to it, the teeth become loose, and subsequently drop out. The progress externally is marked by a black point, increasing rapidly till it attains a considerable size. And then there is an effort at separation of the slough, and this may take place so as to expose the parts within, or the child may sink exhausted before it is detached. There is, throughout the complaint, a copious flow of fetid saliva, which, during its progress, becomes mixed with and coloured by the putrid matters. Generally there is but little pain, the symptoms being those of continually advancing debility, with rapid and feeble pulse, and the somnolence of exhaustion. The appetite often remains good to the last; and death may take place quietly or be preceded by convulsions. In one of the cases which occurred to ourselves many years ago, in a child that was exceedingly emaciated and anæmic, there was no marked redness or swelling, but a small pimple appeared on the external surface of the pallid cheek,

soon followed by phagedænic ulceration, which rapidly exposed the whole of one side of the mouth.

As this affection has by some been suspected to originate in the free use of mercury, it is important here to cite Dr. West's statement to the effect, that having administered mercury in the course of nine years to such of 14,000 children as seemed to require it, he has hardly ever seen salivation follow its employment before the completion of the first detention, and has never at any age observed it produce an affection of the mouth sufficiently serious to occasion anxiety. Our own experience somewhat, though not equally extensive, supports the same negative conclusion.

The indications of treatment in this disease are two, viz., first to arrest the sloughing, and secondly to support the patient's strength. The prognosis must, however, be always unfavourable, and unless the means be adopted early, it must be considered desperate. We must be careful at the first appearance of the characteristic swelling, to examine the inner surface of the cheek in which the affection generally originates, and if we discover there such a condition of parts as has been above described, we must apply freely the only means available, cauterization, with strong nitric acid, of the whole of the parts affected. Other agents, as the actual cautery, have been proposed, but the nitric acid is that preferred by surgeons for sloughing sores generally. This painful operation may be performed by means of soft lint tied to a quill, while the tongue or other healthy parts may be held on one side with a gilt or platinized spatula. The cauterization should be done completely, that is so as to obtain everywhere a healthy surface of the sore, or it had better be left undone. The part should be examined within twelve hours, and be retouched wherever the mortification seems unchecked; and this examination must be repeated every twelve hours to assure us that there is no return of the sloughing process, and if need be the acid must be re-applied. The mouth should also be syringed frequently with warm water, or with a solution of chloride of lime. We think that a careful administration of the vapour of chloroform would be both justifiable and advisable to abate the suffering of the child, under this necessary but very painful treatment.

The patient's strength is to be supported by nutritious diet, by wine and other stimulants, and by tonics, such as quinine or bark, with which chlorate of potash may be combined; since, though we would not trust to it after Dr. West's experience of its failure in two cases, we think it deserving farther trial as an adjunct to other means. It would not probably be difficult to administer it, either in wine or porter, to the extent of two scruples in the twenty-four hours, which was the quantity given by Mr. Hunt to a child three years old; small doses of Dover's powder would be useful in abating the injurious effects of pain.

PROLAPSUS ANI, OR FALLING OF THE FUNDAMENT.

WE often meet with this disease in children of a weak habit, or who have been much afflicted with severe purgings. It is also a frequent consequence of irritation in the rectum, arising from the nestling of ascarides in the gut; or upon other sources of tenesmus. Sir B. Brodie, in a chemical lecture published in the London Medical Gazette, vol. xv. p. 845., remarks, that prolapsus of the rectum occurs most frequently in children, and especially in those with large tumid bellies and costive bowels, where the whole mass of the intestine becomes too large for the cavity which contains it. We call attention to this remark, because we believe that the influence of costiveness, and straining at motion, is too much overlooked by the profession at large as the sources of that dilated and lax condition of the parts near the anus, which may be manifested either in hæmorrhoids or prolapsus. In our article on the former subject, we have quoted this eminent surgeon to the effect that costiveness and not aloetic purgatives are their frequent source.

The following is the treatment recommended by the author just mentioned. When you are called to a child labouring under prolapsus of the rectum—and these are the cases that you most frequently meet with—you will almost invariably relieve him in the following manner. Purge him with calomel and rhubarb occasionally; be very careful about his diet, that he does not eat a great quantity of vegetable substance, which tends to fill up the cavity of the bowel, while it affords but little nourishment; and every morning let some astringent injection be thrown up, as two or three ounces or more, according to the child's age, of a mixture containing a drachm of the tincture of muriated iron to a pint of water. The child should be made to retain the injection as long as possible.

If diarrhœa or tenesmus be associated with the prolapsus, the latter will often cease on the arrest of the former; which may be effected by the means already described; an enema of half an ounce of thin starch, with from four to six drops of laudanum, is very useful in relieving the tenesmus. The bowel should always be returned after its descent, and this is best effected by means of gentle pressure with a clean sponge or napkin wrung out of cold water. If, as the diarrhœa abates, prolapsus should continue, and take place independently of going to motion, it may be necessary to make the child wear a compress and bandage to prevent the descent. And in this case, too, astringent enemata, as the one mentioned above, and such as are given below *, employed twice

* R. Decoct. Quercûs, f. ℥iv.
Tinct. Opii, m. vj.
ft. Enema.

* Take Decoction of Oak Bark, four oz.
Tincture of Opium, six minims.
Mix them for a clyster.

a day, and varied from time to time, will expedite the cure; or three or four ounces of the enema terebinthinæ may be employed for the expulsion of worms, when these are present. A point, in our view, of great importance, is, that so regular and sufficient an action of the bowels should be secured as to prevent all vascular congestion from pressure, and all forcing downwards from straining at stool; these objects may be attained by occasional recourse to gentle laxatives after the accumulations from previous costiveness have been thoroughly expelled; and after the secretions of the bowels have assumed a healthy character.

With the view of strengthening the parts, the debility of which is in general to be considered as the chief cause of this disease, we should advise, not only the cold bath in a general way, but likewise the throwing cold water more directly on the buttocks and back of the child; and besides these tonic means it should be put under a course of chalybeates, myrrh, and the bark of cinchona. — See these under the head of Dyspepsia.

ATROPHIA ABLACTATORUM, OR WEANING BRASH.

THIS is not a special disease, but rather a result of improper feeding, either at or prior to the time of weaning, or both. As there may be solitude in a crowd, where the multitude have no social ties with the individual, so there may be inanition in the midst of repletion, if the food supplied in abundance or excess be such as the digestive organs cannot act upon or assimilate. And if errors of diet have been committed before the child has been entirely deprived of its mother's milk, it will be the less able to digest the improper food which subsequently becomes its only support. But indigestible food is not only inefficacious for the purpose of nutrition, but irritating to the organs through which it passes, and may thus occasion either temporary disorder of their functions, or injury of their structure of a more persistent kind. Hence we may have either vomiting or purging, which may be relieved by a removal of the causes which occasioned it, or we may have these in a more obstinate form, coexisting with the shrunken face and wasted limbs; and tumid abdomen, with the deficient teeth, the unclosed fontanelle, and the mis-shaped bones which mark the inroads of strumous disease. The appetite may be deficient, or capricious, or craving; the skin is apt to be dry and rough, and dusky; vomiting

Vel,
 ℞ Liquor. Calcis,
 Infus. Gallar. āā f. ℥ij.
 Vini Opii, m℥iij. M.
 ft. Enema.

Or,
 Take Lime Water,
 Infusion of Galls, of each two ozs.
 Vinous Tincture of Opium, eight
 minims, for an injection.

is not always present, and often not severe; nor is the diarrhœa always urgent, but the evacuations are always unhealthy. In truth, we may have any out of many results of defective or perverted nutrition; and the treatment must be adapted to the aspect of each individual case, and is to be sought for under the heads of Diarrhœa, Infantile Remittent Fever, Spurious Hydrocephalus, Tabes Mesenterica, and the like.

OPHTHALMIA PURULENTA, OR PURULENT OPHTHALMIA.

THIS disease is noticed under the head of Inflammation of the Eyes.

TEETHING.

OF all the occurrences to which children are liable, not one is attended with such grievous and distressing symptoms as difficult dentition. With regard to the time of their cutting teeth, no fixed or exact period can be laid down, as some cut their first tooth at three or four months old, while others, again, have not the smallest appearance of a tooth before the eighth or ninth month. Dentition commences, however, in the majority of children, between the fifth and eighth month, and the process of the first teething commonly continues to the sixteenth at the least, but often much longer. The two fore teeth, or dentes incisores of the under jaw, are those which usually appear first, and shortly after these are observed, two more come out in the upper one, exactly opposite to the two former. The two lateral incisions of the upper jaw are next in order, and then the two corresponding ones of the lower. These are succeeded by the four molars, then the canine, and, the last of all of an infant's first teeth, their antagonists, or the eye-teeth, making in all sixteen. This, it is well known, is the ordinary number of a child's first teeth, as they are called; but some infants cut four double teeth in each jaw, instead of only two, making the whole number twenty.

Dentition, however, even in healthy children, does not go on uninterruptedly, but its progress is broken by numerous pauses, which cause its total duration to extend often from the seventh or eighth month to the twenty-fourth or thirtieth. The irruption of the lower central incisors is generally completed in a week, but an interval of six weeks or two months often elapses before the upper incisors make their appearance, which then are quickly followed by the lower lateral incisors. A pause of three or four months now frequently occurs before we see the first molar teeth, another of equal length previous to the appearance of the canine teeth, and then another still longer before the last molars are cut. (West, p. 446.)

In children who are healthy and strong, the process of dentition goes on as has just been described, and the teeth are cut soon and easily; but in unhealthy and weak infants, the process is both slow and uncertain. Accordingly, children sometimes cut their teeth irregularly, the teeth appearing first in the upper jaw, and also at some distance, instead of contiguous to each other, which has been accounted, and with some reason, an indication of difficult or painful dentition. It may also be remarked, that the ease or difficulty of dentition may be guessed at by the circumstances under which the two first teeth shall happen to be cut, the succeeding ones generally making their way in a correspondent manner.

At six or seven years of age all children shed their teeth in a gradual manner, and get a fresh and more numerous set, and about the age of one and twenty, four more come out, one in the corner of each jaw, which, from their appearing at that period of life, have been named *dentes sapientiæ*.

Dentition is usually preceded by, or accompanied with, various symptoms: the child drivels; the gums swell, spread, and become hot; there is often a circumscribed redness in the cheeks, with eruptions on the skin, especially on the face and scalp; a looseness ensues, with gripings, stools of a green, pale, or leaden blue-colour, sometimes mucous, and often thick; and the child is watchful and peevish, starts during sleep, and seems convulsed in particular parts of his body. In almost all cases the child shrieks often, and thrusts its fingers into its mouth. These symptoms are sometimes followed by a cough, difficulty of breathing, serofula, marasmus, and hydrocephalus, and very frequently by much febrile heat, thirst, and convulsions.

When the child's body continues open, and none of the violent symptoms attendant on much irritation ensue, we need seldom apprehend any bad consequences from teething.

It has often been observed, that those children in whom there is a copious flow of saliva, suffer the fewest inconveniences during the process of dentition; that such infants cut their teeth more readily in winter than in summer; that such as are inclined to be lean cut them more easily than those that are fat; and those whose bowels are regularly open, the most safely of all.

We have pointed out (in the preliminary article on the diseases of infants) the epoch of acquiring teeth as that which is marked by nature as for a gradual change in the food. A very valuable precaution, which may be regarded as furnishing great part of the preventive treatment of the troubles of dentition, is given by Dr. West, when he warns us not to allow any alteration in the infant's food while it is actually cutting its teeth, but rather to choose the opportunity of some one of the pauses occurring between the irruption of successive teeth for making any such change. Care, too, is to be taken that a child at the breast do not suck too often, so as to overload its stomach; and if it be weaned or in part fed, its diet must be both sparing in quantity, and of a quality to be

easily digested. Hence its milk should be diluted with more than the ordinary proportion of thin arrow root, or barley water; or the latter fluid may be given with the addition of a little isinglass. To avoid all sources of irritation to the digestive organs at a time when they are peculiarly susceptible of disturbance, and to diminish somewhat the nutritious qualities of the food when the system is prone to pyrexia, are the rational indications of prevention to be simultaneously carried out by the regulation of the food.

If, notwithstanding the precautions just mentioned, there be considerable pyrexia, occasional doses of the citrates of soda or potash, as mentioned under the head of Cutaneous Eruptions, will be given with benefit; to which from five to ten minims of ipecacuan wine may be added, if necessary. The treatment of aphthæ is the same as that of the disease under other circumstances, and must be sought for under the first variety of stomatitis. A painful and fungous ulceration is described as sometimes occurring in the gum over the crown of the protruding tooth, and the malady which it marks has been designated as odontitis infantum: it is, however, amenable to the same remedies as the ulcerative stomatitis, and benefitted more especially by the chlorate of potash, in doses of one or two grains three a day, or every four hours. The looseness of the bowels incident to teething, and its treatment, have been already noticed under the head of diarrhœa. Dr. Evanson, like ourselves, deprecates its sudden suppression, nevertheless with him we protest against neglecting it when it is producing injury by its excess. Observation, not prejudice, should be our guide; what we see to be harmless or beneficial, should be uninterrupted, what we perceive to be injurious should engage our efforts to restrain it. In some of these cases of diarrhœa, half a grain of Dover's powder, given night and morning as suggested by Dr. West, will restrain the disorder of the bowels, calm irritation, and procure sleep.

The cutaneous eruptions which occur during teething require no other treatment than such as has been described under that head. Dr. Evanson, and more recently Dr. West, caution us against regarding all diseases appearing during dentition as dependent on that process. The practical inferences from this caution are, that we should avoid neglect through confidence in some spontaneous recovery on the appearance of the tooth on the one hand; and that we should not rely upon a too special treatment by means of the gum lancet on the other. Yet that scarification of the gums may at times be resorted to with great benefit to our patient, is a position that we hold to admit of no doubt, and it remains for us to consider what circumstances indicate its employment. Now, if there be great tumefaction of the gum, and at the same time cerebral disturbance, marked by restlessness at night, or by the supervention of convulsions, the division of the gum is often beneficial, by emptying the congested vessels, which are the source of the mischief; or again, where the advance of the tooth is slow, and its course through the gum seems difficult and painful, even

though there be little vascular turgescence, it will be useful to make an incision. And here we would lay stress upon the remark of an intelligent surgeon, that, even where the tooth is so little prominent as to allow of the wound healing over it before it shall come forth; yet the fact that the recently formed structure of the eieatrix is more readily absorbed than the original texture of the gum, warrants the belief that the operation will facilitate its ultimate protrusion. While, therefore, we condemn an indiscriminate resort to this measure for the relief of symptoms which, though coincident with dentition, may be wholly independent of its progress, we hold that there are two indications which it is well calculated to fulfil, namely, the abatement of local congestion, and the facilitating the passage of the tooth; and we shall be the more encouraged to adopt it, if cough, or troublesome diarrhœa, or difficult micturition, or convulsions, have attended the cutting of former teeth and have ceased when the process was complete. This, however, is to assist, not to supersede, such other means as may be demanded of us. The use of the tepid bath once or twice in the twenty-four hours has a salutary effect in eases where much pyrexia is present, and this may be employed, in addition to the other remedies already indicated, as suited to the particular exigencies of the case.

Opium is sometimes resorted to for the purpose of allaying pain and irritation during difficult dentition, but the practice should be adopted with due caution. Nurses are, indeed, too apt to administer some preparation or other of opium in the watchings and complaints of children, that their own rest may not be disturbed throughout the night. This practice merits the highest censure.

Pure air, proper exercise, wholesome food, an open belly, and every thing that has a tendency to promote general health, and to guard against fever, will greatly contribute to the safety of dentition, as well as to the child's passing quickly through this hazardous period.

The practice of giving children coral and other hard substances to put into their mouths during the period of teething, is not without objection, as they have a tendency to harden the gums. Some have advised a piece of small wax-candle that will yield in some measure to whatever pressure is made upon it by the gums of the child, but there is danger of a piece of it getting into the throat and causing choaking. We may employ with safety one of the elastic rings made of caoutchouc.

CONVULSIONS.

VIOLENT spasmodic affections sometimes attack infants without any apparent cause; but, in general, they are produced either by a lodgment of some acrid matter in the intestines, or wind pent up; or they arise from teething, worms, the sudden striking in of a rash, or the accession of some constitutional disease, as, for example,

the small-pox, scarlatina, &c. Any trifling matter capable of irritating the nervous system, will induce symptomatic convulsions in some infants; while others, again, will withstand a great deal. The younger and more irritable the infant is, the more liable will it be to symptomatic convulsion, especially from any considerable disturbance in the first passages.

Dr. Copland says of these convulsions, that in a great many cases they hold the same relation to inflammatory and febrile attacks in infants as rigors do in adults. Dr. West, too, adopts this view, when he writes, that the same disturbance of the spinal system which ushers in fever, and shows itself by shivering in the adult, declares itself by convulsions in the child; while, in another passage, he tells us that, in a large proportion of cases, convulsions in the infant answer to delirium in the adult. Dr. Alison considers the fits of convulsions in children, without insensibility, as from teething, or from worms, or disordered bowels, as often more analogous to hysteria than to epilepsy, particularly as to their ultimate results. The mention of these analogies is sufficient to impress upon the mind the various circumstances under which convulsions are wont to appear, at the onset, or in the progress of some acute malady, or again from some only temporary disturbance, in the midst of apparent health. Convulsive fits, like those of epilepsy, to which they bear a near resemblance, are evidently of either eccentric or centric origin. They constitute, in the first case, the reflex phenomena, produced through the excito-motory system of nerves by incident irritations, the sources of which are independent of the nervous centres themselves; while, in the second case, they arise directly from altered conditions in those nervous centres. The peculiar susceptibility of the nervous system during the first few years of life renders any special predisposition unnecessary to the operation of these disturbing influences.

The physical condition of the brain, during infancy, as remarked by Dr. West, inasmuch as it is enclosed in a yielding case, admitting of far greater departure from the normal state of its blood vessels on the side either of congestion or depletion than is possible when the skull has become firmly consolidated, must greatly favour the manifestation of symptoms due to the disturbance of its circulation. Convulsions, like epilepsy, may be excited by either extreme, or, to use the words of Dr. Alison, by causes of apoplexy or by causes of syncope, but it is more especially in reference to their production in the latter way that the circumstance just adverted to must be borne constantly in mind. Dr. West assigns the predominance of the spinal over the cerebral system in early life as the grand reason for the frequency of convulsions during that period; he points out the rapid growth of the brain in the first few years after birth, and the simultaneous rapid diminution in the fatality of nervous, and still more of convulsive diseases; facts which have an important bearing on prognosis, as showing that, other circumstances being equal, the peril to life is greatest in the

youngest infants. The same author assures us that though convulsions are often the immediate cause of death, yet this fatal event is rare during childhood, in comparison with the instances in which they pass off without any serious result; and that in proportion to their frequency they less often betoken serious disease of the brain in the child than in the adult, while any cause which greatly excites the spinal system may be attended by them. A recognition of the particular cause upon which the convulsions depend is necessary alike for the formation of a prognosis, and the selection of a proper treatment.

We are informed by Dr. Clarke, of Dublin, that, owing to mismanagement and bad air, an epidemic convulsive disease prevailed in the lying-in hospital of that city among the infants within the first nine days, which swept off great numbers of them annually; but this was at length obviated by discovering the cause.

When convulsions proceed from any other cause than an eruption of the small-pox (in which they are usually regarded as prognosticating a favourable species of it), they are always dangerous as well as alarming. They may, however, when occurring as precursors of small-pox or scarlet fever, be accompanied with symptoms of so intense cerebral congestion as to require moderate leeching of the head, a measure which in cases admitting of doubt we deem it safer to resort to than to omit. When we see the face flushed, the head hot, the eyes injected and prominent, the carotid and temporal arteries full and throbbing, and find the fontanelle, if the head be still open, tense and projecting,—circumstances leaving no doubt of the existence of active congestion of the brain,—depletion ought not to be neglected in the uncertain expectation that an eruption is about to take place. In determining the number of leeches to be applied, we must, however, remember that the bites are likely to bleed very freely, and that excessive depletion should be carefully avoided, especially in very young children. We have seen in an adult profuse bleeding from the nose arise during the congestion which preceded the eruption of small-pox, and it seems desirable to forestall such a natural effort at relief, and the more formidable consequences which may arise out of this state. Besides, there is little fear that the subsequent eruption will have a less favourable course provided the loss of blood be adapted to the constitution of the child as well as to the severity of the symptoms.

In the treatment of convulsions in children, the chief object to be attended to is the removal, if possible, of the cause which has given rise to them. If they seem to be occasioned by improper food and indigestion, a gentle emetic may be given, and for this purpose one or two grains of ipecacuanha may be administered every ten or fifteen minutes until the desired effect is procured. When supposed to proceed from a lodgment of aerid matter in the bowels, this ought to be removed by a laxative clyster, assisted by some gentle aperient given by the mouth, such as calomel, followed by an infusion of senna with a little tincture of jalap; if from

flatulency, then earminatives ought to be used, as advised under that particular head; and if from teething, whenever the tooth can be discovered working a passage through the gum, scarifications may be made with the edge of a lancet immediately over it; and this operation we may repeat for several successive days, till either the tooth makes its way, or the convulsions cease.

Worms having been looked upon as a frequent cause of recurring convulsions, we should always have recourse to the remedies which have been advised under that particular head, when, from the prevailing symptoms, we suspect them to have been excited by this cause.

Should convulsions have arisen from the sudden disappearance of a rash, or the drying up of a discharge from behind the ears, the re-appearance of these ought to be promoted.

Where the fits are of some duration or frequent recurrence, a warm bath, at the temperature of 92 or 94 degrees of Fahrenheit's scale, should be employed, and, if necessary, be often repeated; this, by diffusing the circulation more generally, and determining it to the surface of the body, may be highly useful.

As in the greater number of cases of convulsions there are strong reasons for believing that the head is overloaded with blood, it will be advisable to take away some, either by leeches, or opening the external jugular vein. When convulsions are not relieved by the means which have been suggested, blisters should be applied to the lower extremities.

The application of cold fluids or ice to the scalp, having previously shaved the head, has been attended with happy effects in cases of convulsions, as well as inflammation of the brain, both in children and adults.

With the view of shortening the duration of an individual paroxysm, there is scarcely any stimulus so powerful as the plentiful affusion of cold water over the face, the body being placed in an horizontal position with the face upwards. The effluvia arising from diluted volatile alkali or ammonia, plentifully inhaled, will also prove a useful stimulus. As antispasmodics, the preparations of ammonia and æther will be most serviceable, although assafoetida, valerian, castor, musk, amber, and other fetid substances, are often given. It is only in cases of the most urgent necessity that we should venture on administering a small quantity of the syrup of poppies, or a few drops of the tincture of opium.

The liquor potassæ subcarbonatis, given in doses of from five to fifteen drops, according to the age of the child, and repeated every ten minutes, has been known effectually to remove convulsive affections in young children, which had for a length of time resisted the powers of the oxide of zinc, musk, extractum hyoseyami, clysters of assafoetida, anodyne injections with opium and blisters. It is probable, however, that in these cases the fits arose from severe griping pains in consequence of acidity.

Where a high degree of organic debility prevails, volatile alkali,

viz. the spirit. ammoniæ aromaticus, in doses of a few drops, in some proper vehicle, may be substituted for the former. In elysters, the liquor vol. cornu cervi is likewise of avail in these cases, in a greater or less dose, according to circumstances.

It is most important not to mistake convulsions, or other cerebral symptoms which result from general debility or emptiness of the vessels of the brain, with those that are produced by an opposite condition; yet some care is often necessary to make a correct diagnosis. We may suspect the former source of the present symptoms if the infant be ill nourished, as a consequence of improper food, or if it have suffered under any wasting chronic disease; if it have recently been subject to severe relaxation of the bowels, even though that may have ceased for a few days, or if it have undergone, on account of any previously existing illness, such depletion by purgatives and blood-letting as may have too much depressed its feeble powers. The pallid and anæmic aspect of the child will confirm our suspicions, and the sunken fontanelle, if the head be unclosed, is almost decisive as to the true origin of the malady; if there be some heat of the surface, and some flushing of the face, both are less and less continuous than where there is active congestion; the temporal vessels, too, are empty, and there is no unusual throbbing of the earotids, and the skin has not the elastic resistance when touched which belongs to it where pyrexia is present. The half closed eye in sleep, and somnolence, if they occur early in the course of cerebral symptoms, belong rather to exhaustion than congestion. In cases of this, sesquicarbonate of ammonia, in one grain doses, the spiritus ammoniæ aromaticus in doses of five minims, the spiritus ætheris sulphuriei compositus, to the extent of from three to five minims, or the spiritus ætheris nitrici, to double that, given either in milk or in any aromatic water, or in decoction of bark sweetened with a little sugar, will be found useful. Milk, too, in small quantities at a time, or barley water, in which a little isinglass is dissolved, may be employed as the diet, and to these a little brandy—as fifteen minims—may be added occasionally—as every hour. Benefit will arise also from procuring sleep by means of one or two grains of Dover's powder at night. The child should at the same time be allowed to lie at rest, and the occurrence of diarrhœa be carefully guarded against, if necessary, by such measures as are described under that head.

Inward fits are much talked of by nurses, and some authors have indeed made mention of them; but more particularly Dr. Armstrong. Infants during the first month are said to be more or less liable to them. The symptoms are these: the child appears as if it was asleep, but the eyelids are not quite closed; and if you observe them narrowly, you will see the eyes frequently twinkle, with the white of them turned up. There is a kind of tremulous motion in the muscles of the face and lips, which produces something like a simper or smile, and sometimes the appearance of a laugh. As the complaint increases, the infant's breath seems now and then to

stop for a time ; the nose becomes pinched : there is a pale circle about the eyes and mouth, which sometimes changes to livid, and comes and goes by turns ; the child starts, especially if you stir it ever so gently, or if you make the least noise near it. Thus disturbed, it sighs or breaks wind, which gives relief for a while ; but presently it relapses into dosing. Sometimes it struggles hard before it can break wind, and seems as if falling into convulsions ; but a violent burst of wind from the stomach, or vomiting, or a loud fit of crying, sets all to rights again.

For the removal of these, Dr. Armstrong recommends us to give antimonial wine in a few drops, according to the age of the infant ; but all that appears to be necessary is, to take up the child when it sleeps too long, and the smile often returns, with any of the other symptoms just described, and to tap it gently on the back, rubbing its stomach and belly well before the fire. This gentle exercise will bring a little wind from its stomach (which is supposed to be the cause of the complaint), and the child will then go quietly to sleep again. Should these simple means not prove sufficient, some carminative may be given to it, — such as a drop or two of the *oleum anisi*, or *oleum carui*, on a bit of white sugar.

SYPHILIS INFANTUM. SYPHILIS OF INFANTS.

THIS has already been considered (see pp. 204, 205, and 236.).

A D D E N D A.

THE DISEASES OF PREGNANCY.

[THE following notice of some of the Diseases of Pregnancy was accidentally omitted to be inserted in its proper place. It ought to precede the article "Puerperal Convulsions," at p. 457. of this volume.]

Three different stages evidently exist during a state of pregnancy, each of which has a distinct set of symptoms; and when we reflect on the alteration which the constitution suffers in consequence of impregnation, and the vast distension and dislodgment of the uterus which prevail at a more advanced period, we cannot be surprised at the many complaints and irregularities which then arise.

The first stage of pregnancy is usually accompanied with a suppression of the menses, together with frequent nausea and vomiting, heartburn, indigestion, peculiar longings, headach, giddiness, toothach, and sometimes a slight cough. The breasts are more full and tender; the areola round the nipple becomes much wider, of a darker colour, and its circle is studded with enlarged follicular glands. There often occurs likewise a feverish disposition, with debility, emaciation, irritability, peevishness of temper, and total alteration of the countenance, every feature of which becomes much sharpened. Some women breed so easily as to experience hardly any kind of inconvenience whatever: whilst others, again, are perfectly incapable of retaining the least thing on their stomach, and are thereby reduced to a state of extreme weakness.

With some women the vomiting will continue during the whole or greater part of the second stage of pregnancy, as well as the first: but this does not usually happen. Partial suppressions of urine with a frequent inclination to void it; itching about the external parts of generation, costiveness, tenesmus, and the piles, are what they are chiefly incommoded by during this period. Most women quicken about the sixteenth week after conception, at which time the mother becomes sensible to the slightest efforts of the child; and besides the complaints just enumerated, she will then be liable to sudden faintings, and slight hysteric affections.

According to the commonly received opinion, quickening, so termed, has been generally understood to commence at the time when particular sensations are perceived by the mother, supposed to be occasioned by the first motion of the child. The most usual time of feeling any such symptoms is about the latter end of the fourth or beginning of the fifth month of pregnancy: at this period the uterus filling up the pelvis slips out and rises above the rim; and from that sudden transition, women of a delicate constitution and irritable fibre, are apt to faint, more particularly so if in an erect position.*

During the last three months, or third stage of pregnancy, general uneasiness, restlessness (particularly by night), costiveness, œdematous swellings of the feet, ankles, and private parts, cramps in the legs and thighs, difficulty of retaining the urine for any length of time, varicose swellings of the veins of the belly and lower extremities, and the piles, are the affections which usually prove most troublesome. In weak, delicate women, of an irritable habit, convulsive fits sometimes arise, which are ever to be regarded in a dangerous light.

Nausea and vomiting. — It has been observed, that frequent nausea and vomiting are apt to prove somewhat troublesome to pregnant women, and in many cases to reduce them to a state of very great debility. As these most frequently arise immediately upon first getting out of bed in the morning, the patient should be recommended, under such circumstances, never to rise until she has taken either a dish of tea, coffee, or whatever else she has usually accustomed herself to for breakfast.

If the vomiting should become at any time so severe as to threaten the bringing on a miscarriage from the violence of straining, it may then be advisable to direct two or three table-spoonfuls of the saline medicine to be taken every now and then, in such a manner as that the effervescence shall ensue after it is swallowed; besides which, the patient's body should be kept open with some gentle laxative. If these means do not succeed, much relief may often be obtained by the application of a small blister to the pit of the stomach. As the sickness in such cases arises from mere irritation, general bleeding should never be recommended, except in unusually plethoric patients.

Local applications have been recommended to abate excessive vomiting. As such, a piece of folded linen cloth, moistened with tinctura opii, may be kept constantly applied to the region of the stomach. Probably a small addition of æther might increase its good effect. It sometimes happens that vomiting is incessant for many days together, accompanied with great prostration of strength and constant thirst, and at the same time an utter impossibility of retaining any thing on the stomach. In this state the application of leeches to the pit of it, and a constant attention to suffer nothing

* See Obstetric Studies, by Mr. James Hogben.

to be swallowed that can irritate, allowing the patient only asses milk, and that by a single spoonful, have been found to afford relief. If a considerable degree of nausea prevails, without the ability of throwing up, fourteen or fifteen grains of pulv. ipecae. may then be given, experience having proved that gentle emetics may be administered with perfect safety to pregnant women.

Headach, with plethora. — When either headach, drowsiness, or a sense of fulness in the vessels, proves troublesome, drawing off a few ounces of blood from the arm in robust women will most likely be attended with advantage. In those of a weak, irritable habit, the application of a leech or two to each temple will be more advisable than bleeding from the system, where the headach proves obstinate and resists the other means we have employed. The bowels are at the same time to be kept in a proper state by some gentle aperient.

Toothach. — This distressing pain may often be alleviated by the application of ereasote or of some essential oil (eloves or eajeput); and still more certainly by the use of a few drops of camphorated chloroform applied to the cavity of the tooth on a piece of cotton.

Heartburn. — If the patient is incommoded by heartburn (which usually proceeds from an acidity in the stomach), half a drachm of magnesia may be taken morning and evening to obviate it: and if this fail, we may then have recourse to the absorbent mixture advised below*, which Dr. Sims informs us†, he has found the most efficacious of all remedies for the removal of this distressing symptom in pregnant women.

Longings. — When peculiar longings arise in a state of pregnancy, they should always be gratified, if possible, as women are apt to miscarry from the anxiety these occasion when not indulged in them: but that the child in utero, which was before perfect, can be marked by any depraved appetite of the mother, or be mutilated by any disagreeable object being presented to her, cannot be admitted. All aberrations from the usual forms must be ascribed to an irregular action of the formative or plastic powers in the foetus; and this irregularity is generally shown in the median line of the body, as in cases of cleft palate, hare lip, ectopia of the bladder, hypospadias, &c.

In cases where there is a redundancy of parts (as six toes or six fingers), the supernumerary organ should be removed at once by

* R. Magnesiae, ʒj.
Aq. Puræ, f. ʒvss.

Spirit. Cinnam. f. ʒiij.

Liquor. Ammon. Subc. f. ʒj.

ft Mistura, cujus sumat cochl. larg. ij. vel
iij. pro re nata.

* Take Magnesia, one drachm.

Pure Water five ounces and a half.

Spirit of Cinnamon, three drachms.

Solution of Subcarbonate of Ammonia, one drachm.

Mix them, and take two or three table-spoonsful for a dose, as the occasion may require.

† See the Medical and Physical Journal, No. viii. p. 206.

the scissors or knife, without the cognisance of the mother; in two or three days the wound will cicatrise and leave no appreciable mark.

Hysteria.—Should any hysterical affection or sudden fainting arise, little more will be necessary than to expose the patient to a free, open air, to place her in a horizontal position; and to give her a glass of cold water with a few drops of the liquor ammoniæ subcarbonatis, or a little wine sufficiently diluted.

Costiveness, Piles, &c.—Costiveness, partial suppressions of urine, and the piles, which attend on the second stage of pregnancy, are occasioned by the great pressure of the uterus on the rectum and bladder. The first and last of these symptoms are to be obviated by a daily use of some gentle laxative, such as a solution of manna, or the electuary advised below.* Pills composed principally of aloes (such as Anderson's) are too generally used by pregnant women for this purpose; but they are highly improper, as being of too stimulating a nature, and very apt to occasion hæmorrhages and the piles. In troublesome piles, which are externally seated, the best application is leeches, and the irritation may afterwards be lessened by preparations of the plumbi acetatis. Ten grains of this, dissolved in four ounces of rose water, form a good lotion, with which the parts may be washed frequently. If necessary, a little of the vinous tincture of opium may be added.

Diarrhœa.—If diarrhœa arises in pregnant women, it should be treated just as at any other time (see this disease); and after the stomach and intestines are cleared, astringents may be used, if there is no great degree of fever. If fever is present, that must be attended to chiefly, and be first removed.

Suppression of Urine.—When a suppression of urine takes place, which is apt to happen in the advanced stage of pregnancy, besides making use of emollient fomentations, elysters, and gentle purgative medicines,—such as the oleum ricini, the patient drinking plentifully at the same time of diluent liquors,—it will be necessary to have recourse to chirurgical assistance by drawing it off by means of a catheter morning and evening.

Retroverted Uterus.—It sometimes happens that a retroversion of the uterus ensues, in which case it becomes misplaced downwards and backwards, because the os uteri is tied forwards to the meatus urinarius, and there is no communication behind by which it is held to the rectum; but anteriorly it is connected with the neck of the bladder by close cellular substance; therefore whatever

* R. Confect. Sennæ, ℥ij.
Potassæ Supertart. ℥ij.

Pulv. Jalapæ, ℥ss.
Syrup. Rosæ, q. s. M.

ft. Electuarium, ejus sumat ægra molem
nucis moschatæ hora somni, vel pro re
nata.

* Take Confection of Senna, two oz.
Supertartrate of Potass, two
drachms.
Powder of Jalap, half a drachm.
Syrup of Roses, a sufficiency.

Mix them, and of this electuary the pa-
tient may take the bulk of a nutmeg at
bed-time, or occasionally.

raises the bladder will raise the cervix uteri, and what raises this must at the same time depress the fundus; so that, in a retroversion of the uterus, the urethra is drawn up close behind the symphysis pubis; and in the case now under consideration, the bladder rises and draws up the os uteri with it.

The only period of pregnancy at which a retroversion of the uterus is apt to arise is between the end of the third and fourth months; for, in the early months of pregnancy, the uterus in length from the fundus to the cervix is not so great as to fill the space between the sacrum and the neck of the bladder, and cannot for that reason produce suppression. This applies to all situations of the uterus in unimpregnated women, and women who are with child, till the close of the fourth month of pregnancy; after which the uterus cannot be made to go down into the pelvis. When the uterus has once fairly ascended into the abdomen, it is impossible for it to return into the pelvis until its volume has been diminished by delivery or abortion.

In most of these cases the suppression of urine is the only material object to be attended to; for the uterus being retroverted, the woman cannot make water; therefore it must be drawn off by the catheter. If necessary, this operation is to be repeated twice a day, till the uterus, by a gradual enlargement, recovers its natural situation, which will be preferable to any interference of the attendant to reduce it. Where it is impossible for him to attend twice a day for the purpose of drawing off the water, the reduction may possibly be effected by the patient placing herself on her hands and knees, and then passing two fingers of one hand into the vagina, and a finger of the other into the rectum, by which means it is possible sometimes to succeed. Where the event is left to time, the uterus is sure to recover its proper situation; for which reason it is preferable to leave it.

When it becomes necessary to pass the catheter in cases of retroverted uterus, a long gum-elastic catheter should always be preferred, because the point being once fairly passed into the meatus, a moderate forward pressure will cause the instrument to take the necessary backward curve, and enter the bladder without the least risk of injury to the patient.

Troublesome Itchings.—Where a severe itching about the parts of generation attends on pregnancy, it will be proper to keep the woman's body perfectly open with some cooling laxative, and to wash the parts three or four times a day with a solution of lead,—such as the liquor plumbi subacetatis dilutus: if much inflammation accompanies the itching, topical bleeding may be requisite.

Edematous Swellings.—The swellings of the feet, ankles, and private parts, which arise in the last stage of pregnancy, are occasioned by the pressure made by the womb, which now prevents the free return of the blood from the lower extremities. Gravid women are usually free from these complaints in the morning, but towards night they frequently suffer much from them. Slight

scarifications with the edge of a lancet, to discharge the stagnated fluid, with the after application of flannels wrung out in a warm infusion of emollient herbs, have been employed in cases of great distension. In general, however, it will only be necessary that the patient does not keep her feet in a pendant position for any length of time.

Cramp.—Cramps of the legs and thighs are to be relieved by rubbing the parts with cold vinegar, with camphor dissolved in oil, or the liniment here* advised, the person wearing stockings in bed. At an advanced period of pregnancy they are only to be relieved by labour removing the cause. Where the stomach is affected with spasms, proper doses of æther and tincture of opium, with the other means advised under the head of Hysteria, in cramps of that organ, will afford the greatest benefit. In such cases the patient must carefully avoid every kind of food that is apt to prove flatulent or hard of digestion, and she must keep her body perfectly open.

Inability of Sleeping and Restlessness.—Inquietude and inability to sleep prove troublesome complaints towards the latter period of pregnancy; the patient being obliged to rise frequently throughout the course of the night, in order to expose herself to the influence of cool air. In cases of this nature the greatest relief is afforded by attending carefully to the state of the stomach and liver. The tincture of henbane, combined with a mild aperient, may often be employed with much advantage.

Varicose Veins.—The veins of the legs, thighs, and belly, often become varicose in the last stage of pregnancy, and sometimes put on an alarming appearance from their great enlargement and distension. No bad consequences have, however, been observed to attend such a condition; and as the complaint is purely mechanical, and produced by the pressure of the uterus on the pelvic veins, no other relief can be afforded than the steady and uniform support of a bandage up to the time of parturition.

Jaundice.—In some instances the woman is affected with a pain in her side, and excessive sickness at the stomach and retchings, the skin assuming a deep yellow colour. It is only under these circumstances that the complaint proves distressing, and it is usually occasioned by the formation of one or more gall-stones, and the obstruction which they oppose to the usual and regular passage of the bile. The means most conducive to relieve the woman from this degree of the complaint were blood-letting, warm fomentations to the painful part, and large doses of opium, with such laxatives as shall counteract the effects of the opiates.

* R_y. Spirit. Camphoræ, f. ʒj.
 ——— Æther. Sulph.
 Tinct. Opii, aa f. ʒss. M.

ft. Linimentum.

* Take Camphorated Spirit, one ounce.
 Spirit of Sulphuric Æther,
 Tincture of Opium, of each half an
 ounce.
 Mix them for a liniment.

Jaundice, or any other bilious affection prevailing during a state of pregnancy, from the pressure of the uterus on the gall-bladder or duets, is to be obviated by keeping the body open with some gentle laxative, such as pills composed of rhubarb and soap.

Incontinency of Urine.—This is a very disagreeable complaint, as it keeps the woman constantly in an uncomfortable state. It is to be removed only by delivery, but may be moderated by a frequent horizontal posture. Its bad effects may be prevented by a scrupulous attention to cleanliness, and the use of a thick compress of linen, or a sponge of considerable size, properly fastened.

Over-distension of the Abdominal Skin.—In the latter months of pregnancy the integuments of the abdomen will sometimes become cracked and sore, the skin seeming to suffer from over-distension. In this case nothing is so effectual as a frequent use of warm oil by friction; and to give it somewhat of a medicated appearance, a little camphor may be added.

False Pains.—Pains somewhat resembling those of labour, and known by the name of false pains, are apt to come on at an advanced stage of pregnancy, and often to occasion an unnecessary alarm. In such cases confinement in an horizontal position, bleeding if plethoric, laxative medicines if costive, and administering small and frequent doses of some opiate, until the patient finds ease, will be necessary.

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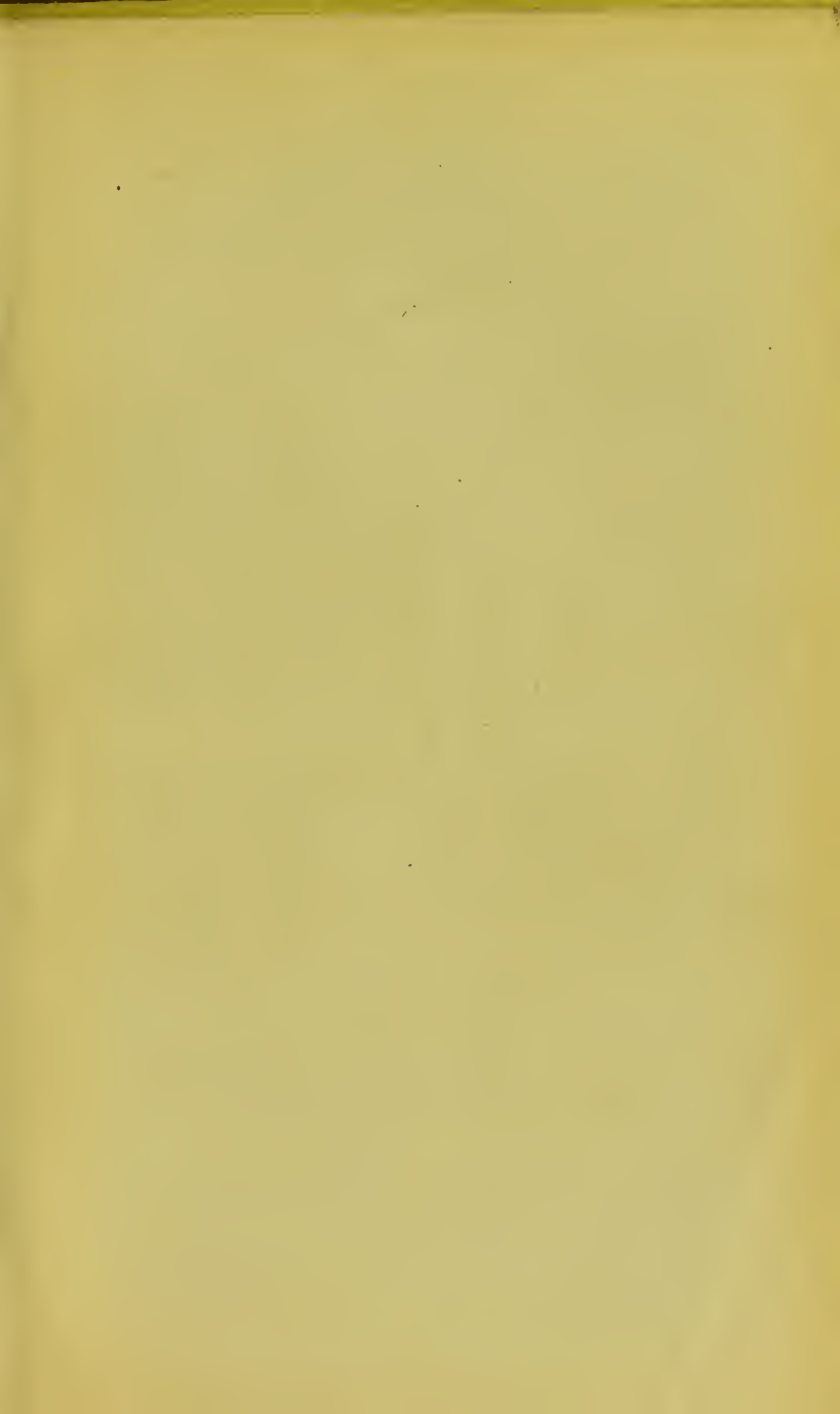
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